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EA-90-01

ENVIRONMENTAL ASSESSMENT BOARD



ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARINGS

VOLUME: 53

DATE: Thursday, August 29, 1991

BEFORE:

HON. MR. JUSTICE E. SAUNDERS	Chairman
DR. G. CONNELL	Member
MS. G. PATTERSON	Member

FARR
ASSOCIATES &
REPORTING INC.

(416) 482-3277

2300 Yonge St. Suite 709 Toronto, Canada M4P 1E4

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ENVIRONMENTAL ASSESSMENT BOARD
ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARING

IN THE MATTER OF the Environmental Assessment Act,
R.S.O. 1980, c. 140, as amended, and Regulations
thereunder;

AND IN THE MATTER OF an undertaking by Ontario Hydro
consisting of a program in respect of activities
associated with meeting future electricity
requirements in Ontario.

Held on the 5th Floor, 2200
Yonge Street, Toronto, Ontario,
on Thursday, the 29th day of August,
1991, commencing at 10:00 a.m.


VOLUME 53

B E F O R E :

THE HON. MR. JUSTICE E. SAUNDERS	Chairman
DR. G. CONNELL	Member
MS. G. PATTERSON	Member

S T A F F :

MR. M. HARPUR	Board Counsel
MR. R. NUNN	Counsel/Manager, Informations Systems
MS. C. MARTIN	Administrative Coordinator
MS. G. MORRISON	Executive Coordinator



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A P P E A R A N C E S

B. CAMPBELL)	ONTARIO HYDRO
L. FORMUSA)	
B. HARVIE)	
J.F. HOWARD, Q.C.)	
J. LANE)	
J.C. SHEPHERD	)	IPPSO
I. MONDROW)	
J. PASSMORE)	
R. WATSON	)	MUNICIPAL ELECTRIC
A. MARK	)	ASSOCIATION
S. COUBAN	)	PROVINCIAL GOVERNMENT
P. MORAN	)	AGENCIES
C. MARLATT	)	NORTH SHORE TRIBAL COUNCIL,
D. ESTRIN	)	UNITED CHIEFS AND COUNCILS
		OF MANITOULIN, UNION OF
		ONTARIO INDIANS
D. POCH	)	COALITION OF ENVIRONMENTAL
D. STARKMAN	)	GROUPS
D. ARGUE)	
T. ROCKINGHAM		MINISTRY OF ENERGY
B. KELSEY)	NORTHWATCH
L. GREENSPOON)	
R. YACHNIN)	
J.M. RODGER		AMPCO
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M. IZZARD)	ASSOCIATION, INTERNATIONAL
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G. GRENVILLE-WOOD		SESCI
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A P P E A R A N C E S
(Cont'd)

H. POCH)	CITY OF TORONTO
J. PARKINSON)	
R. POWER		CITY OF TORONTO, SOUTH BRUCE ECONOMIC CORP.
S. THOMPSON		ONTARIO FEDERATION OF AGRICULTURE
B. BODNER		CONSUMERS GAS
J. MONGER)	CAC (ONTARIO)
K. ROSENBERG)	
C. GATES)	
W. TRIVETT		RON HUNTER
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N. KLEER)	NAN/TREATY #3/TEME-AUGAMA
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J. CASTRILLI)	JAMES BAY COALITION
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M. OMATSU)	OMAA
B. ALLISON)	
C. REID)	
E. LOCKERBY		AECL
C. SPOEL)	CANADIAN VOICE OF WOMEN
U. FRANKLIN	)	FOR PEACE
B. CARR)	
F. MACKESY		ON HER OWN BEHALF
M. BADER		DOFASCO
B. TAYLOR)	MOOSONEE DEVELOPMENT AREA
D. HORNER)	BOARD AND CHAMBER OF COMMERCE

I N D E X o f P R O C E E D I N G S

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<u>AMIR SHALABY,</u>	
<u>JULIA MARION MITCHELL,</u>	
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1 ---Upon commencing at 10:00 a.m.

2 THE CHAIRMAN: Be seated, please.

3 Mr. Poch?

4 MR. D. POCH: Thank you, Mr. Chairman.

5 PAUL JONATHAN BURKE,
6 AMIR SHALABY,
7 JULIA MARION MITCHELL,
8 MARION ELIZABETH FRASER,
9 LYN DOUGLAS WILSON,
10 WILLIAM OSBORNE HARPER; Resumed.

11 CROSS-EXAMINATION BY MR. D. POCH (Cont'd):

12 Q. Just before picking up where we left
13 off, there are a few miscellaneous matters hanging that
14 we could perhaps clear away right now.

15 First of all, Mr. Burke, yesterday after
16 the afternoon break you came back and were able to
17 clarify that our comparison between Hydro and other
18 utilities, the numbers we had used, had in fact been
19 the right numbers from Exhibit 25 from the corrected
20 page 60. And that you and I, in fact both of our
21 versions had the old ones for some reason.

22 Can you explain, were there two sets of
23 attainable or target numbers that had been derived at
24 the time of Exhibit 25 that led to this inclusion of
25 the wrong set in the original exhibit, the set with the
higher numbers? Or is that just from another exhibit?

MR. BURKE: A. I really don't know the

1 answer to that right now. If it is important to you, I
2 could try to find out how the first set got in there,
3 but I don't know.

4 Q. Yes, it would be interesting to find
5 out, since they are, as you pointed out, in some cases
6 twice as high, and they are I take it, closer to the
7 latter day numbers in Exhibit 76. It would just be
8 interesting for us to know if that was numbers that are
9 from a different scenario, for example, what that
10 scenario would be.

11 A. I can ask at the break. I think some
12 of the people that are here may known the answer to
13 that. I don't.

14 Q. Thank you.

15 Mr. Burke, we also from a couple of days
16 ago had been talking about the penetration rates that
17 would be achieved, and there was a separate exhibit we
18 filed, where it was indicated that in the ultimate
19 year, if we went to 100 per cent incentives, you would
20 be anticipating attaining as high as a 75 per cent
21 annual penetration. So, first of all, let's just get
22 the definition of annual on the record.

23 A. Well, I didn't prepare that response,
24 but my sense, Mr. Wilson will correct me if I'm wrong
25 here, is that at some point in time penetration rates

1 in any given year of the eligible stock would reach 75
2 per cent, if incentives of 100 per cent of incremental
3 costs were paid.

4 Q. That means 75 per cent of the
5 opportunities that are available or present themselves
6 because of stock turnover in that year?

7 MR. WILSON: A. Yes, that is correct.

8 Q. So then we would expect if, as we
9 have seen, for example, your programs to the year 2000
10 are averaging an expectation of 30 over the average of
11 that decade, say 23, in the residential 40 in the
12 commercial, I think were the numbers roughly. If we
13 want the cumulative average, basically, if we want a
14 number that expresses the attainment of the total
15 economic potential that you could get by 2014 if you
16 went for this kind of a high incentive scenario, we
17 would have to average the early lower numbers and the
18 latter higher numbers, is that right?

19 A. Yes, that's correct.

20 Q. Mr. Burke, I understand you have some
21 of these numbers for us broken out by sector?

22 MR. BURKE: A. The numbers I have got
23 are the numbers we have in our Exhibit 76 projections.

24 Q. So these aren't the numbers assuming
25 100 per cent incentive. These are the numbers that are

1 reflected in Exhibit 76?

2 A. That's right. That is my
3 understanding that that is what you are looking for.

4 Q. That would be helpful, thank you.
5 That would be fine.

6 A. Well, the twenty-five year average
7 for the residential sector is the --

8 THE CHAIRMAN: Are you referring to
9 Exhibit 76 at the moment?

10 MR. BURKE: Yes, I am.

11 THE CHAIRMAN: Perhaps we could look it
12 up. It might be helpful -- to me, anyway.

13 MR. BURKE: The numbers in Exhibit 76 are
14 presented by sector, so that for the residential sector
15 the year 2015 potential induced is on page 33, and the
16 total is 3,374 megawatts for the combined residential
17 agricultural centre.

18 MR. D. POCH: Q. Just to be clear then,
19 these were the numbers prior to the fuel switching and
20 standards scenario being introduced.

21 MR. BURKE: A. These are pure EEI
22 numbers prior to standards.

23 Q. Yes, thank you.

24 A. Well, in fact, these are prior to the
25 standards even in the 1990 load forecast. There is--

1 Q. Yes.

2 A. --that slight correction that I
3 mentioned in my direct several times. But that doesn't
4 distort these penetration rate results that I'm
5 presenting very much.

6 Then four pages later on page 37, the
7 cumulative net load impact forecast is given for the
8 year 2015, and that is 1,100 megawatts, and that works
9 out to a 33 per cent penetration rate.

10 THE CHAIRMAN: I am sorry, what was that
11 again, please?

12 MR. BURKE: On page 37 --

13 THE CHAIRMAN: No, just the penetration
14 rate.

15 MR. BURKE: 33 per cent.

16 MR. D. POCH: Q. Okay, Mr. Burke, before
17 we move to another sector then, can you just tell us
18 then what the sectoral annual penetration rate gets to
19 in the latter years then?

20 MR. BURKE: A. Well, as I indicated
21 before, this is done by technology in the residential
22 sector, or specific measure, and what I can give you is
23 the average to the year 2000 was 23 per cent.

24 Q. Yes.

25 A. Between 2000 and 2015 it is 60 per

1 cent. Now, the attainable between 2000 and the year
2 2015, is 60 per cent of the increment and potential
3 between the year 2000 and 2015. What I think is
4 somewhat misleading about that number is that some of
5 the attainable, in fact, is referring to the capturing
6 of potential that was missed in the first part of the
7 period.

8 Q. I take it it is the combination of
9 this 23 per cent of the total in the first decade and
10 60 per cent of the remaining and some of the original
11 that was overlooked or didn't get captured--

12 A. Yes.

13 Q. --that gives us the 33--

14 A. Per cent.

15 Q. --on average.

16 A. That's correct. Probably the best
17 way to look at it for the residential sector is in
18 terms of annual percentages, and that isn't going to
19 help you compare with a number like 75 per cent. You
20 know, it suggests that each year we are going to get
21 three or four per cent of the existing stock replaced
22 or measures installed in the existing stock, and that
23 cumulates over time. Once the existing stock has been
24 completely done, you are left with the new stock to
25 work on.

1 That's about all I can say--

2 Q. That's fine?

3 A. --at this point for the residential
4 sector.

5 For the commercial sector, we gave the
6 numbers before. 35 per cent on average by the year
7 2000, 50 per cent was the marginal annual penetration
8 rate by the year 2000. The average over the period to
9 2015 is 48 per cent. You can see where those numbers
10 come from.

11 On page 43 of Exhibit 76, the potential
12 is 4,336 megawatts, and on page 48 --

13 MS. PATTERSON: This is page -- you went
14 to page 43, and by 2015 it was a total of?

15 MR. BURKE: 4,336 megawatts.

16 MS. PATTERSON: I thought we had
17 corrected that?

18 MR. BURKE: Pardon?

19 MS. PATTERSON: I thought we had a
20 correction for that that gives us 4,345.

21 MR. BURKE: You are right. That was due
22 to a change in total retail.

23 THE CHAIRMAN: I'm sorry, I have the
24 figure 48 per cent, and I just forgot what that was.
25 48 per cent is 2000, 2015?

1 MR. BURKE: No, that's for the 1990 to
2 2015.

3 THE CHAIRMAN: 1990 to 2015?

4 MR. BURKE: Yes, the complete average
5 over the whole period. That is based on taking the
6 value for 2015 of 2080 megawatts cumulative net load
7 impact on page 48 and dividing it by 4,345. I think
8 that would still give you 48 per cent.

9 MR. D. POCH: Q. All right, are there
10 comparable industrial numbers available?

11 MR. BURKE: A. Yes. For the industrial
12 sector, the estimate was 47 per cent by the year 2000.
13 This report does not actually contain the estimate for
14 potential for the industrial sector for 2015, but I did
15 give a number in the direct evidence, and that was 1200
16 megawatts.

17
18
19
20
21
22
23
24
25 ...

1 [10:12 a.m.] On page 59, the cumulative net load
2 impact forecast is 645 megawatts and the ratio of the
3 two is 54 per cent.

4 Q. The 54 per cent then would be for the
5 entire period 1990 to 2014?

6 A. For the entire period. From the
7 period 2000 to 2015 it's 75 per cent.

8 Q. Yes. All right, thank you.

9 Ms. Mitchell, I understand that there was
10 also a number you were going to get us that hadn't been
11 made an undertaking, or rather an answer, and that was
12 whether or not tungsten halogen bulbs met the total
13 customer cost test?

14 MS. MITCHELL: A. Yes. I just wanted to
15 clarify that we did do a test on that and it is not
16 cost-effective at this time.

17 Q. So, that would be an example that
18 falls into this category of technologies which might be
19 available if avoided costs were higher?

20 A. I'm sorry?

21 Q. That would be an example of
22 technology or measure that might come into the realm of
23 economic, pass the total customer cost test, should
24 avoided cost rise?

25 A. Yes.

1 Q. Thank you. Okay. Can we take out
2 Volume 1 of the background materials, Exhibit 269 and
3 we are going to be looking at page 103.

4 Now, this is a memo, I think we have
5 looked at part of it before, from Vicki Sharp, manager
6 of program testing analysis, and I would like to direct
7 you to the highlighted sections on page 103,
8 and we can just read them in for the benefit of those
9 who will be reading this:

10 Given the high fixed cost of the
11 audit for electrically heated homes,
12 increasing the number of measures
13 installed would only...improve the net
14 benefit and provide better assurance of
15 demand and energy reductions.

16 Major effort should be made...

17 THE CHAIRMAN: I think you missed a line.
18 You missed a line.

19 MR. D. POCH: Oh, I'm sorry.

20 THE CHAIRMAN: Do you want to start
21 again, that's probably the simplest way.

22 MR. D. POCH: Yes. Thank you, Mr.
23 Chairman.

24 Given the high fixed cost of the
25 audit for the electricity heated homes,

1 increasing the number of measures
2 installed would only marginally increase
3 the cost to Ontario, but would improve
4 the net benefit and provide better
5 assurance of demand and energy
6 reductions.

7 Major effort should be made to ensure
8 that all major energy improvements are
9 undertaken within the home.
10 And then if we go down to the penultimate

11 paragraph:

12 As you know, I am a proponent of the
13 whole house approach, so the closer we
14 get to this kind of decision-making for
15 the customer the better will be our
16 performance.

17 I am concerned that our ability to
18 re-visit these houses for future
19 conservation upgrades will be limited on
20 a cost effectiveness basis as a second
21 personal audit will likely be needed.
22 This is counterbalanced by getting out
23 of the starting blocks early and raising
24 awareness.

25 Q. Now, I take it that you have indeed

1 come up with a community-based conservation program, we
2 have some excerpts describing it on the overleaf at
3 page 103A. This is the Espanola project we have
4 referred to, Ms. Mitchell?

5 MS. MITCHELL: A. Yes, correct.

6 Q. All right. I think you have
7 explained it's predominantly residential, there is some
8 small amount of commercial there?

9 A. I could give you the exact numbers,
10 if you like. There are about 900 commercial customers.

11 Q. All right. And unlike the power
12 savers audit we spoke of yesterday where you go into a
13 home -- rather, where you were sending out audit
14 requests, you got half them back, then you sent out
15 results and you were going to do visits to 600,000 and
16 then you were going to do follow-up programs to some of
17 those. I take it one distinction between the two
18 programs is that in this test here, your
19 community-based conservation program, you are proposing
20 to pay the full costs of all economical EEI measures?

21 A. Up to the full cost, yes.

22 Q. Up to the full cost. All right.

23 A. I just wanted to make a small
24 correction on the number of commercial customers in
25 this project.

1 Q. Yes.

2 A. It's 263.

3 Q. 263?

4 A. Commercial customers.

5 Q. Okay. And that's just a slight
6 amendment from the 240 that appears at page 104 I see?

7 A. Correct.

8 THE CHAIRMAN: How many residential, do
9 you have any idea?

10 MS. MITCHELL: 1,910 residential
11 customers.

12 MR. D. POCH: Q. Okay. So, again, you
13 have expanded slightly since the original 1,530
14 estimated in the PCRD?

15 MS. MITCHELL: A. The numbers I gave are
16 the number of participants.

17 Q. Oh, the number of participants.

18 A. Yes.

19 Q. I'm sorry. Okay. That's the 1,910
20 and the 263. Then, I take it, you were going to get
21 some 80 per cent participation amongst residential,
22 which gets you to the 1,530 and 90 per cent for the
23 commercial?

24 A. That is correct.

25 Q. All right. Included in this list of

1 measures, in the measures that you will go in and pay
2 up to full avoided cost for, are insulation and
3 energy-efficient windows and air sealing, ground source
4 heat pumps, compact fluorescents, energy-efficient
5 water heaters; correct?

6 A. Yes.

7 Q. These are the kinds of measures that
8 Hydro will, in general, merely recommend that customers
9 install where cost-effective on the basis of a power
10 savers audit; right?

11 Certainly the customers who don't get the
12 visit, they'll get a recommendation?

13 A. That's correct.

14 Q. Some of them that get the visit will
15 get a couple of these actually installed and the rest
16 recommended, if appropriate?

17 A. That's correct.

18 Q. All right. I understand you expect
19 1.07 megawatts in 1991?

20 A. That is from the residential market,
21 yes.

22 Q. Yes, in the residential. That
23 appears at page 106, actually, of our exhibit, and
24 3,949 megawatthours in 1991?

25 A. That's correct.

1 Q. Would you agree that this means on
2 average .7 kilowatt or 2,575 kilowatthours per year for
3 each participant when we spread it over the 1,530
4 participating residential customers?

5 A. Yes, I agree.

6 Q. All right. If you took this approach
7 more broadly in Ontario, say we took it to the 600,000
8 homes that you identified for the power savers audit
9 which are single-family dwellings that have high
10 electricity use and are presumably heating with
11 electricity - which corresponds roughly with the
12 numbers Mr. Burke gave us for fuel switching
13 potential - in that program we saw the potential that
14 was assumed, or the attainable that was assumed, I
15 think the numbers came up to 58 or 63 megawatts, in
16 that range, and that included --

17 A. This was for the power savers audit
18 home tune-up program?

19 Q. Yes.

20 A. That was 83 megawatts.

21 Q. 83 megawatts. Okay. And the 83
22 megawatts would have included though all those other
23 homes where you are doing light bulbs or doing audits
24 and so on, other than the 600,000?

25 A. Correct.

1 Q. Okay. If we got the .7 kilowatts per
2 home even just from the 600,000 that are the ones with
3 electric heating, so all the measures would be
4 presumably there to be done, my math says that's 420
5 megawatts; is that about right?

6 A. I haven't checked your numbers.

7 Q. Just .7 times 600,000.

8 A. Yes.

9 Q. So, even if we had the 23 per cent of
10 electrically heated homes fuel switch, of the 77 per
11 cent that are remaining, if you went in - excuse the
12 militaristic language - all guns blazing, with an
13 Espanola kind of project, if you could get this kind of
14 take-up you are assuming you are going to get in
15 Espanola that your initial research tells you, there
16 would be another 77 per cent of 420, whatever that
17 works out to, about 300 megawatts?

18 A. Correct.

19 Q. Okay.

20 A. I would like to point out though on
21 page 103 of your exhibit there's a paragraph in Ms.
22 Sharp's memo which strongly suggests that we do not
23 have the capability to undertake such a program at this
24 time.

25 ...

1 [10:23 a.m.] Q. Right. You would definitely have to
2 build capability to do this? This would be a major
3 undertaking?

4 A. Yes.

5 Q. Okay.

6 MR. WILSON: A. Mr. Poch, page 103A of
7 your exhibit, the first paragraph points out that this
8 project was designed to test an approach to marketing
9 which would be suitable for smaller Ontario
10 communities. I think you have generalized it to the
11 total of all communities in Ontario, and I am not so
12 sure we would agree that it would work in every
13 community in Ontario.

14 Q. Okay. I notice that at the top of
15 page 104 of our exhibit, indeed you have gone ahead and
16 quantified what you could get and I assume this now
17 includes homes with heating and without heating, if you
18 just applied this to communities with populations less
19 than 20,000 in Ontario over the decade. And there I
20 see the number is 900 megawatts.

21 THE CHAIRMAN: Sorry, where do you see
22 that?

23 MR. D. POCH: This is at the upper
24 right-hand corner on page 104 which is from the PCRD.

25 THE CHAIRMAN: Right. Thank you.

1 MR. D. POCH: Q. Is there an analysis
2 available behind that number, Mr. Wilson, other than
3 someone's, you know, calculator?

4 MR. WILSON: A. I suspect it is not much
5 more than someone's calculator.

6 Q. Can you find out for us what
7 percentage of the residential sector that is for; that
8 is, in communities with populations less than 20,000
9 for Ontario? Or can you give us a rough idea?

10 A. I don't think we have that at hand.

11 MS. MITCHELL: A. I believe there are 99
12 Northern Ontario communities that fall within that
13 population range.

14 Q. And just kind of population-wise,
15 simply, I assume about half of Ontario's population is
16 in big cities or more. Toronto is 3 million and so on.

17 A. I would guess, yes.

18 Q. Excuse me a minute.

19 Now, this particular program has been
20 designed for smaller communities. I take it there is
21 no reason you couldn't design a program that was
22 equally as all pervasive and intensive for larger
23 communities, though you would have to tailor it
24 differently. We have high rises and what have you
25 here; fair?

1 A. Well, I think I said a moment ago
2 that the infrastructure would not support such a
3 program at this time and that's why the home tune-up
4 program is structured the way it currently is.

5 Q. I understand. But ultimately if you
6 could build the capability and if you can find the
7 resources--

8 A. Those are two very important
9 elements.

10 Q. Yes.

11 --we might be able to double that number
12 of 900 megawatts if we can go into the bigger towns and
13 cities--

14 A. Yes.

15 Q. --with this kind of program?

16 A. Yes, anything is possible.

17 MR. BURKE: A.. I would just like to,
18 before we double too many numbers here, we have
19 estimated the potential in Exhibit 76 for doing all
20 economic measures in electrically heated houses. And
21 there may be some additional measures that we have left
22 out. But I think you have a pretty good estimate of
23 the potential to work with, certainly by the year 2000,
24 and you can apply whatever penetration rate you want
25 to, but I am not sure you are going to end up doubling

1 1800 and still have a whole lot left over.

2 Q. That's my point, Mr. Burke, because
3 it says the 900 megawatts is what is attainable. I
4 read it as attainable. It says available if you apply
5 this concept.

6 A. My conclusion is that must be a
7 pretty rough number.

8 MR. B. CAMPBELL: Sorry. I would assume
9 as well, Mr. Poch, that the 900 applies to both the
10 residential and commercial sector in all of these
11 towns. This is a program number, is it not? It is not
12 a residential number.

13 MR. D. POCH: Q. Maybe you can help us
14 there, Ms. Fraser. I take it that the situation in
15 Espanola where commercials are a relatively small
16 proportion of the load is typical of small communities,
17 whereas in Toronto we would expect commercial to be a
18 much larger part of the load? And in other large
19 centres.

20 MS. FRASER: A. You notice that even in
21 Espanola the savings from commercial account for almost
22 half the savings, even though there is a tenth of the
23 number of customers.

24 MR. BURKE: A. Just remind you the
25 total--

1 MS. FRASER: A. That's lighting.

2 MR. BURKE: A. --saving we have
3 estimated for weatherization-type measures is about
4 1,350 megawatts in existing buildings, which is the
5 target of this sort of program. That is in
6 electrically heated houses.

7 Q. Just to close this off then. Ms.
8 Fraser, then it would not be appropriate simply to
9 double this by catching the large towns because you
10 have told us there is much more commercial and so much
11 richer in opportunities. We have to scale much more
12 than that if we wanted to capture commercial and
13 residential?

14 MS. FRASER: A. Scale up which?

15 Q. The proposed results.

16 We get into that difficulty of the
17 shifting ratios of commercial to residential when you
18 go to larger towns?

19 A. Yes. But if you look at the total
20 potential in residential and commercial, I am not
21 looking at the attainable just the potential, there is
22 not that much difference between the two.

23 Q. In any event, the bottom line, I
24 guess, is fairly clear. This is a program which can
25 squeeze a lot more a lot faster out of the economic

1 potential of these communities; is that...? If you
2 have the resources, if you can get past that hurdle?

3 MS. MITCHELL: A. Well, we don't know
4 that yet. That is the purpose of this project.

5 Q. You are projecting that?

6 A. Yes.

7 Q. Thank you. Let's move on then to the
8 question of targets. We will be brief because we have
9 spoken about this a lot. Perhaps you can just turn up
10 Volume 2 of our materials, Exhibit 270, at page 5.

11 We have provided this table simply to
12 explain the graphics which follow and you will notice
13 the sources at the bottom that this is about the plan,
14 that is, the numbers in the DSP for demand side
15 management as opposed to the updates.

16 First of all, if you go to page 17 of our
17 exhibit, we have the sort of simpler version for
18 capacity and energy, what's the induced EEI in the DSP.

19 Mr. Burke, I take it obviously this is,
20 given the scale, it probably wouldn't matter if this is
21 accurately plotted, it would look the same. I take it
22 the shape of the lines is consistent with your
23 understanding of the plan.

24 MR. BURKE: A. How it was done in
25 Exhibit 25?

1 Q. Yes.

2 A. Yes.

3 Q. And in the balance of power documents
4 as opposed to Exhibit 76?

5 A. Yes.

6 MR. SHALABY: A. The units on the bottom
7 though are not correct. Capacity is shown in megawatts
8 energy and gigawatthours. These should be gigawatts
9 and terawatthours.

10 Q. Yes. Indeed, it has been corrected
11 at the top there under the subtitle and I thank you for
12 that, Mr. Shalaby.

13 A. That's my contribution for the
14 morning.

15 Q. We'll try.

16 So, first of all, just to observe.
17 Obviously we have a much steeper pitch there up to
18 around 2001 in terms of the energy -- well, in terms of
19 both, but it's most apparent with energy and then the
20 slope levels a bit thereafter.

21

22

23

24

25

...

1 [10:32 a.m.] We have heard about an acceleration in
2 your attainment, for example, well, we spoke of some
3 yesterday. Does that mean that if the ultimate
4 penetration numbers don't change, if your targets don't
5 change, if all we are seeing is a mere acceleration,
6 that if we plotted this now with the latest information
7 we have from the latest PCRD plans - which aren't even
8 Exhibit 76, they are post that - we would see an even
9 steeper line earlier on, and then since attainment has
10 to come out to the same total at the end, we would see
11 a flatter line later on, steeper earlier on, flatter
12 later on? Does that logic --

13 MR. BURKE: A. I am sorry, I don't quite
14 know which period is early or later.

15 Q. Pre-2000, mid 1990s, we have
16 certainly seen a proposed, what has been called an
17 acceleration, to see results sooner in the '90s.

18 A. You would find -- yes, if you are
19 talking about the period from 1990 to 2000, it would go
20 sort of from what looks like a concave to a convex sort
21 of curve.

22 Q. So, we'd have a steeper early rise,
23 and then a flatter section as we got later on in years
24 towards the year 2000--

25 A. Yes.

1 Q. --if the total adds up the same.

2 A. Yes.

3 Q. Similarly, if what we are seeing is
4 an acceleration from post 2000 numbers to pre-2000 that
5 balancing would have to occur. But I think your
6 evidence is that is not what we are seeing.

7 A. I don't know what you are saying
8 about an acceleration pre and post.

9 Q. Acceleration? Well, the 190
10 megawatts that you told us about attributable to the
11 220 of the 240 million committed that had been nuclear
12 pre-engineering transferred to DSM.

13 A. Okay, Mr. Wilson probably can tell
14 you where these fit in.

15 Q. They are additional to the early
16 years. Are they net additional overall, are they
17 partly net additional overall, are they accelerated
18 from what we would have gotten in the later '90s, or
19 are they also accelerated to some extent from what we
20 would have seen post 2000?

21 MR. WILSON: A. We haven't finished our
22 assessment of that. We have been busy doing other
23 things. But my judgment on this is that we have taken
24 results that are scheduled for the late 1990s, and
25 brought it closer in to the early 1990s.

1 It seems conceivable to me that we also
2 have pulled some results out of the post 2000 period.

3 Q. Okay.

4 A. I'd just point out as well that in
5 the update, although the year 2000 hasn't changed, the
6 expectations for the year 2015 has increased. In the
7 DS plan, the year 2014 target was 3,400 megawatts, and
8 in the update is 3,730 megawatts. So that we have
9 increased our ultimate long-term results as well. So
10 there is a change of sheet coming in at a level change.

11 Q. Thank you. Can you turn to page 123?
12 I am sorry, 123 of Volume 2.

13 Just to confirm, this describes the way
14 you would take account of how new programs might affect
15 your resource plans, your target. This is still
16 accurate? You would screen them, if they pass, you
17 would add it to the portfolio, you would determine the
18 penetration assumption, and then you would revise the
19 forecast of attainable, which ultimately goes into the
20 primary load forecast.

21 MR. BURKE: A. I think it sounds like an
22 accurate description of the process. The only thing
23 I'd point out is the forecast is revised once a year.
24 It's not ongoing.

25 Q. Right, you wouldn't do it at each

1 program, change.

2 A. Right.

3 Q. Indeed, we have seen you have added
4 programs, got new information, and you have reassessed
5 both your potential and attainable since the DSP?

6 A. Yes.

7 Q. You have raised the potential in
8 Exhibit 260 at page 37? We saw 1,450 more megawatts,
9 right?

10 A. Yes.

11 Q. That is the latest number?

12 A. Yes, Exhibit 76 is 1,450 more than
13 the DSP.

14 Q. Indeed if you turn to Exhibit 260,
15 which is your exhibit at page 18, in fact, this is just
16 a reproduction of Exhibit 76, page 28, if that is more
17 convenient for you.

18 I just noted there that you have got 16
19 commercial sector technologies noted, four of which are
20 footnoted as being new since the plan. So, that would
21 be an example of this addition process?

22 A. Yes, I believe page 38 of the same
23 exhibit summarizes the changes from the DSP to Exhibit
24 76, the major things that cause that 1,450, it lists
25 the commercial sector technologies as well as the

1 effects of additional study in the residential sector,
2 inclusion of the agricultural segment, some new
3 technologies in the residential sector, explicit
4 recognition for the industrial sector of increased
5 potential.

6 Q. Mr. Wilson, you have told us how this
7 has led to an increase of, I think, 400 megawatts, once
8 we get to 2014, roughly? You gave us the numbers just
9 a minute ago.

10 MR. WILSON: A. Yes, it has. I'm sorry.
11 I'm not sure that -- it is just a change in
12 technologies, which has resulted in the change of --

13 Q. Yes, all right. Fair enough.

14 MR. BURKE: A. Wait a minute, wait a
15 minute. What he was talking about was the attainable
16 in 2015. I'm talking about potential. I believe
17 that's what you are talking about still, induced. The
18 difference in potential is a different number.

19 Q. Yes, that's the 1,450 that we spoke
20 of a few minutes ago?

21 A. 1,450 by the year 2000 -- did you
22 want to know--

23 Q. Yes, I would like to know the number.

24 A. --what the change in the potential
25 is? I think that just might take a minute, so I will

1 give you that after the break.

2 Q. All right, but I take it the net
3 effect of this is that you have raised the planned, the
4 induced, attainable, this number of about 400 in 2014,
5 and so far you haven't raised it for the year 2000?

6 A. Okay, the penetration rates have
7 changed effectively.

8 Q. Right, and the result --

9 A. That is the second part of the
10 process.

11 Q. The bottom line, the target, if you
12 will, is still 2000 for 2000, although we have heard it
13 has gone up about 400 megawatts by the year 2014?

14 MR. WILSON: A. Yes, that is correct.

15 MR. B. CAMPBELL: Mr. Poch, just so we
16 are clear, this is ignoring--

17 MR. D. POCH: Ignoring the offset.

18 MR. B. CAMPBELL: --what has happened
19 since, which is looking at--

20 MR. D. POCH: Other mechanisms.

21 MR. B. CAMPBELL: --in conjunction with
22 looking at it on a more provincial basis with fuel
23 switching and standards. You are ignoring that.

24 MR. D. POCH: Yes.

25 MR. WILSON: Mr. Poch, in Exhibit 25, or

1 in the DS plan, we'd looked at the potential and
2 estimated what we could accomplish by the year 2000.
3 When we went through the list of measures, the
4 penetration rate exercise, we couldn't come up with
5 2000 megawatts, and consequently we wrote in an
6 estimate for what would come along, we hoped, as we
7 gained experience, which is called the unidentified.
8 As we have gained some experience, we have filled in
9 some of the blanks.

10 MR. D. POCH: Q. You have filled in all
11 the blanks for residential and commercial already,
12 right?

13 MR. WILSON: A. I don't think we have
14 filled them all in yet, but we are working on it.

15 Q. I thought that was your evidence in
16 chief, and it was just in industrial you had some
17 unidentified still.

18 A. Yes, I think that's true.

19 Q. All right, but you -- we just spoke a
20 minute ago how we have now been able to see an
21 acceleration in the early half of this decade of what
22 you thought the ramp up would be. Doesn't that mean
23 you are going to have more resources available to you
24 in terms of people and capability in place and so on by
25 the latter half of this decade, and thus that won't be

1 the limiting factor any more?

2 A. I guess the market consists of
3 basically three kinds of opportunities. One is
4 basically new buildings. We will capture those as we
5 go along.

6 There are the renovations, and we have to
7 capture those when they occur.

8 There is another part of the market which
9 is retrofit, which are the kinds of things you could do
10 at any time. The assumption has been made in many
11 cases here that we will proceed to capture one-tenth of
12 a ten year opportunity each year. Some of the things
13 we brought forward simply are bringing forward some of
14 the retrofit.

15 Q. Just so I can understand then, in the
16 introduction to the PCRD, we have reproduced it in
17 Volume 3 of our materials at page 27. Let me just
18 preface that question with this. PCRD is something
19 that has been put together after the initial plan.
20 This was, as I think it is obvious from the second
21 paragraph there, at least its collation was done in
22 response to the interrogatories you received. I take
23 it that, as we have heard over the last few days, many
24 of the programs and the screening and development and
25 all that has gone on. It is a continuing process?

1 A. That is two questions, the first part
2 of the question is when do we put this together? We
3 started putting it together in December of 1990, as we
4 started to realize that the number of interrogatories
5 was going to rise past a couple hundred, it might reach
6 1,000. Of course it has exceeded that. We thought it
7 was a good opportunity to consolidate information so
8 everyone could have access to this.

9 The second part of the question is yes,
10 this is a dynamic creature.

11 Q. Right. This wasn't what the plan was
12 based on, although some of the information in here
13 would have been surmised or available to you at the
14 time of the plan.

15 A. I think some of it would have been,
16 yes.

17 Q. Yes. Now, Mr. Burke, you have told
18 us it is not appropriate to look at a given program,
19 see that that program has changed and just take the
20 change and add to your -- either your economic
21 potential or your attainable. That your economic
22 potential and attainable numbers weren't derived
23 specifically that way, and so just because one program
24 is performing well, we can't know that the total is
25 going to necessarily shift?

1 MR. BURKE: A. That is correct. I
2 described how the plan was derived from the long term
3 perspective.

4 Q. Yes.

5 A. That is, you took the potential
6 induced times the penetration rate, and that
7 penetration rate applies for each sector in different
8 ways. That is, in the commercial sector it is a
9 penetration rate applied to a building type. In the
10 residential sector, it is applied to particular
11 measures. In the industrial sector it is applied to
12 industries and particular equipment types.

13 Q. Mr. Burke, I am sorry to interrupt,
14 but I can maybe save you some breath. I didn't want
15 you to repeat your evidence. I just wanted to grant
16 you that I was respecting that distinction. I did
17 understand your evidence the first time. Unless you
18 have something further to offer.

19 A. No, okay. It seemed like you didn't
20 make the distinction between plans and programs.

21
22
23
24
25 ...

1 [10:43 a.m.] There is no connection in the long run
2 between specific program results and the way the plan
3 was derived.

4 Q. Yes, and that is what you have said.
5 Would you agree, though, that if we take the sum of the
6 results expected for all of the programs, and if we
7 account for free riders and duplication between
8 programs, which you do in the PCRD, that the sum should
9 add up?

10 A. Well, there is a business plan --

11 THE CHAIRMAN: Add up to what?

12 MR. D. POCH: Add up to the total
13 expectation.

14 MR. BURKE: Well, I don't know about the
15 expectations beyond 1995. It's my understanding that
16 the energy management branch has a business plan for
17 five years and that they have program estimates for
18 five years only, and maybe there are additional items
19 of information in the PCRD, but my understanding is
20 that for the first five years of the long-term net load
21 impact forecast we are completely consistent with the
22 expected net impacts of the programs that the energy
23 management branch has in its latest business plan at
24 the time we do the load forecast.

25 MR. D. POCH: Q. So, somewhere a

1 reconciliation has been done, this summing has been
2 done and there's an analysis?

3 MR. WILSON: A. The reconciliation, the
4 most recent one, is the one provided in Exhibit 76
5 which takes the business plan of the energy management
6 branch expected gross results in terms of reported
7 results from field delivery of programs, corrects that
8 for free riders, corrects that for progress - which Mr.
9 Burke has assumed will be occurring in any event over
10 time - it was a persistent solution, and that is quite
11 explicitly laid out.

12 Q. Yes. Now, that's with the business
13 plan and you have said you have to correct the business
14 plan for free riders and so on. That's a different
15 estimate, that's sort of a global estimate you make as
16 opposed to the individual estimates that are for each
17 program in the PCRD which could be added up; right?

18 MS. FRASER: A. If you add up all the
19 approved programs in the PCRD, you'll get around 595
20 megawatts in net terms. Some of those --

21 Q. 595 by 1995 or '96?

22 A. It's all over the map. We talked
23 about savings by design yesterday, that was to '93; the
24 lighting program for commercial/industrial is to '95;
25 the compact fluorescent was a one year program; the

1 Espanola test is a two year program, so it's -- you
2 know, as we say. We've still got a lot of program
3 design to do and, as I understand Mr. Burke's load
4 forecast, he makes assumptions about the fact that
5 we're going to come through on our promises to design
6 and deliver those programs.

7 Q. Okay. Now, if we look --

8 THE CHAIRMAN: Just a minute. What was
9 the figure you gave?

10 MR. D. POCH: 595 megawatts.

11 MS. FRASER: 595 if you add up the
12 approved programs.

13 THE CHAIRMAN: All right.

14 MR. BURKE: I would just like to point
15 out that the EEI cumulative estimate to 1985 is 882
16 megawatts.

17 MR. D. POCH: Q. 882, okay. If we look
18 at page 27 of Volume 1 of our materials, which is the
19 introduction to the PCRD, we see mention of 24 existing
20 program documentations.

21 I take it that's the approved programs
22 you just spoke of?

23 MS. FRASER: A. Yes.

24 Q. And they have one to five year
25 horizons on them?

1 A. Correct.

2 Q. All right. If you extend them all to
3 five years and assume you are going to add a few more
4 programs, that is where you get to this 882?

5 THE CHAIRMAN: I'm sorry, where do you
6 get the 24 from?

7 MR. D. POCH: I'm sorry, 32 existing
8 program documentations, which is the first bullet
9 point.

10 THE CHAIRMAN: You said 24, I thought.

11 MR. D. POCH: Well, I think then I posed
12 the question wrong and Ms. Fraser answered wrong.

13 MS. FRASER: Yes, obviously I did. I
14 didn't have that page turned up.

15 MR. D. POCH: Q. Is 32 correct, Ms.
16 Fraser?

17 MR. BURKE: A. It's in Volume 3 not 1.

18 Q. Yes, Volume 3, page 27.

19 MS. FRASER: A. Yes, 32 existing
20 programs.

21 Q. Yes. Those are the ones that you
22 referred to as being prudent?

23 A. Yes.

24 Q. All right. So, in addition, it notes
25 there are 24 concepts assessed and 26 other measures

1 considered?

2 A. Correct.

3 Q. They then are not yet in, they
4 haven't been added up yet, so we can see what may be
5 had there?

6 A. I haven't added them up yet, no.

7 Q. Okay.

8 MR. WILSON: A. Well, just to possibly
9 disagree with my partner here.

10 MS. FRASER: A. I didn't add them up.

11 MR. WILSON: A. In our planning we rely
12 on the 32 existing programs, we rely on the knowledge
13 of people in each of the three sectors to construct an
14 estimate of the renewal of programs, including existing
15 ones which are due to expire in a year or two years,
16 and some of the concepts that they think are going to
17 succeed in getting approval, and each sector estimates
18 how well -- what they're going to be able to do over
19 the next five years and the resources required to do
20 that.

21 In the current business plan of the
22 energy management branch, the three sectors added
23 together have identified 972 megawatts of gross
24 megawatt EEI results, about 500 of which are already
25 captured in approved programs, the balance obviously

1 have to come from the programs which are yet to be
2 approved or reapproved.

3 THE CHAIRMAN: 992 over what period?

4 MR. WILSON: 1991 to 1995 inclusive,
5 that's the five years. Those are gross megawatts as
6 they'll be reported in our program results.

7 MR. D. POCH: Q. Gross before netting
8 free riders out; is that what you are saying?

9 MR. WILSON: A. Before netting free
10 riders, and it's measured at the customer's meter on a
11 16 hour average and so on.

12 Q. There is nowhere where we have this
13 laid out; do we, how you have built this up and arrived
14 at the exact numbers and what assumptions you are
15 making about these new concepts and programs and so on?

16 The PCRD wouldn't provide us with that,
17 we have the disaggregated information in the PCRD?

18 A. Yes, that's correct.

19 MS. FRASER: A. The various business
20 plans though that we have evolved through in this
21 process have been filed.

22 The 1989 to 1993 business plan was
23 attached to Interrogatory 4.7.148, which you'll have.
24 The draft business plan for 1991 to 1995, which Mr.
25 Wilson just referred to, the final one, the draft one

1 was attached to Interrogatory 4.7.222.

2 Q. I understand another one is underway
3 now?

4 A. That's right, every year.

5 Q. Okay.

6 THE CHAIRMAN: Should those
7 interrogatories be put on the list, 4.7.148 and
8 4.7.222? Have I correctly reported that?

9 MR. B. CAMPBELL: Those are the correct
10 numbers, Ms. Fraser?

11 MS. FRASER: 4.7.148, 4.7.222.

12 MR. B. CAMPBELL: Sorry, what was the
13 first one?

14 MS. FRASER: 4.7.148.

15 MR. B. CAMPBELL: All right. Then they
16 should be added to the list then, Mr. Chairman.

17 MR. NUNN: 261.18 and .19.

18 THE CHAIRMAN: 261.18 and .19.

19 ---EXHIBIT NO. 261.18: Interrogatory No. 4.7.148.

20 ---EXHIBIT NO. 261.19: Interrogatory No. 4.7.222.

21 MR. D. POCH: Q. Mr. Burke -- Panel,
22 could you turn up page 75 of Volume 2 of our materials.
23 You will, I trust, remember this, Mr. Burke, from
24 Panel. 1, this is from our Exhibit 107, page 23
25 thereof where we simply plotted the--

1 MR. BURKE: A. Yes.

2 Q. --the marginal load forecasts. We
3 noted at the time how they all managed to pass through
4 that number 2,000 in 2000 though they were a bit
5 different before and different after.

6 A. Well, not all, but the last three.

7 Q. The last three.

8 A. Yes.

9 Q. The one before that passed through
10 the number 1,000, that was the previous target for --

11 A. That was the previous target, yes.

12 Q. All right. We did talk about this at
13 length in Volume 8 of the transcript, pages 1374 and
14 1375, 1376 and so on - I won't take you through that -
15 but, can you recall that really - and I think you have
16 said this in different ways this week - you said the
17 reason that the 2,000, which was a corporate target,
18 could be part of your forecast was because there was an
19 indication from the corporation that there was going to
20 be corporate commitment to attain that, and that you
21 evaluated whether that was a reasonable assumption and
22 in light of that corporate commitment you felt
23 comfortable enough putting that point in and adhering
24 to it in each subsequent forecast?

25 A. Yes, and 1990 was the first year that

1 there was an identified amount equivalent to 2,000
2 megawatts. But I should say, each of the years, at
3 least '89 and '90, in a less detailed way in '88, there
4 was penetration rate information supplied by energy
5 management branch as to their expectations for the year
6 2000.

7 Q. Yes.

8 A. And so, the fact that the potential
9 went up but the attainable estimates did not, in part
10 reflects the view of people in energy management branch
11 that the penetration rates were not held constant, they
12 were actually reduced on net--

13 Q. Yes.

14 A. --in going from '88 through to '90.
15 This is not my override, this was with experience as
16 they looked more and more at what was ahead, that is
17 what the result was.

18 So I, on that basis, wasn't about to
19 override that sort of information.

20 Q. So, in other words, the penetration
21 rates fluctuate and, as it happened, the potential
22 rates happened to fluctuate roughly inversely to hold
23 this...

24 A. Well, the potential is done quite
25 independently of the estimated penetration rates.

1 Q. Yes.

2 A. It was, in fact, finalized before
3 penetration rates were determined.

4 Q. Yes.

5 A. So it went up. I then received
6 information from energy management branch -- when I say
7 I, the division as a whole.

8 Q. Sure.

9 A. That was input to consider.

10 Q. Do you think, Mr. Burke, or any
11 member of the panel, that it's - and I don't mean this
12 as an insult by any means - that it's not surprising
13 that where there is a corporate target enunciated that
14 these things have a way of becoming self-fulfilling
15 prophecies, you are going to struggle with your budget
16 and with your bosses to get enough resources to get the
17 penetration rate to achieve that target, and that these
18 targets then take on a life of their own because,
19 needless to say, to the extent you are successful and
20 your estimates are right, that's what you'll get, and
21 it tends to become both a floor and a ceiling. It is
22 how you justify resource allocation within your branch,
23 within the corporation competing for resources with
24 other divisions, other branches, other programs.

25 So, that is just - I guess none of you

1 are corporate sociologists - but maybe you can tell us,
2 that doesn't strike you as a strange observation or
3 suggestion from your own experience?

4 MS. FRASER: A. No.

5 THE CHAIRMAN: Is that a question, I'm
6 not quite sure?

7 MR. D. POCH: Well, I proposed a
8 suggested explanation for this unusual inversely
9 cancelling out phenomena, and I'm just wondering if
10 that suggested explanation seems perverse to you from
11 your own experience.

12 And I think Ms. Fraser was about to say,
13 no, it didn't seem perverse.

14 MS. FRASER: Not totally, but I would add
15 that in the same way that the corporate target
16 originally was set at 1,000 and was deemed to be
17 challenging and set at 2,000 and deemed to be even more
18 challenging, was set and becomes, you know, something
19 that we certainly work towards.

20 The statements by our Chairman for the
21 past year-and-a-half were very clear that if we can get
22 more we will, and that becomes just as much a mind-set
23 as the 2,000. So, in that sense, if we can do more we
24 will, and I think I already indicated that and that's
25 the way I've looked at it.

1 I can go through, you know, sort of
2 chapter and verse in terms of where the penetration
3 rates went up and down in commercial and why.

4 I mean, we were certainly very bullish
5 and then we reviewed them with our field staff and got
6 a little bit more conservative as a result of
7 marketplace activity. We looked at U.S. penetration
8 rates which were for broad-scale programs around 6, 8,
9 12 per cent penetration; we looked at carefully
10 targeted U.S. programs, we looked at sort of 30 to 40
11 to 50 per cent penetration, and so we really didn't
12 think that we were off base.

13 MR. D. POCH: Q. Okay. But, Ms. Fraser,
14 in fact if you turn in the transcript - I don't need
15 you to turn it up, I can read it in - but, if you would
16 like to, Volume 49 at page 8877, Ms. Couban was asking
17 you about free riders and you answered at line 18:

18 "A. Oh, certainly, yes. And I
19 think there are ways that we can design a
20 program to minimize the number of free
21 riders, then that just makes it all the
22 more cost-effective in terms of what
23 we are doing."

24 And here's what I'd like to focus on.

25 ...

1 [11:01 a.m.] "And then we can, instead of paying
2 people that would have done it anyway, we
3 can take that money and pay the ones who
4 wouldn't have done it more. So, it is
5 really just a way of maximizing economic
6 benefit and maximizing the amount of
7 demand management we can get."

8 So, I have read that to indicate resource
9 commitment within the corporation is a key factor. You
10 can get more if you can throw more resources at it.
11 Obviously you reach a limit, but that can be one of the
12 barriers if it becomes a constraint.

13 MS. FRASER: A. I don't read that
14 sentence as a barrier as much as an enthusiastic
15 leading of the charge to go get it.

16 Q. I don't suggest for a minute, Ms.
17 Fraser, you aren't enthusiastic and anxious to get what
18 you can.

19 THE CHAIRMAN: I think we are going over
20 ground that was gone over pretty thoroughly yesterday.
21 I think we have discussed the use of more resources,
22 more money, different criteria and so on. I think that
23 has been pretty fully explored.

24 MR. D. POCH: I agree Mr. Chairman. In
25 fact, that was my last question in that section and I

1 will move on.

2 MR. B. CAMPBELL: Mr. Wilson has been
3 trying to add to this answer all the way through this,
4 and I think he should be allowed to do so.

5 THE CHAIRMAN: If he does that, he does
6 that at his own risk because if he raises some matters,
7 Mr. Poch then can certainly follow that up.

8 MR. D. POCH: It is the last day before a
9 long weekend....

10 MR. WILSON: I will take the risk.

11 On page 75 of Volume 2, you have plotted
12 the predicted level of EEI and pointed out that there
13 seems to be miraculous convergence of the lines at the
14 year 2000 at 2000 megawatts.

15 I would just like to raise the point that
16 in '86 and '87, given the knowledge we had at the time,
17 1,000 megawatts looked like a darn good job. As we got
18 closer to putting the Demand/Supply Plan together,
19 2,000 megawatts didn't look out of reach and it was set
20 as a corporate target. I think you are suggesting that
21 Hydro is frozen on 2,000 and being frozen is really not
22 likely to think seriously about changing that.

23 I would just like to make the point that
24 Hydro has just changed it again, as I read it into
25 direct evidence, and our target is now 2,230. That

1 represents the level in Case C.

2 Now, we are looking at new mechanisms and
3 the mechanism in this case is the use of standards and
4 to capitalize on the government's willingness to assist
5 us in this endeavour. But I think it is incorrect to
6 suggest that there is any rigidity in our position on
7 what we are going to accomplish.

8 MR. D. POCH: Q. Just to clarify. That
9 change was because of the new policy phenomenon which
10 allows you to go to fuel switching or tells you to go
11 to fuel switching and tells you to expect higher
12 standards.

13 MR. WILSON: A. It is actually despite
14 fuel switching but it is because we think we can --

15 Q. It is the net impact?

16 A. To go for higher standards, that's
17 right.

18 Q. That's the net impact.

19 A. Yes.

20 Q. Including the fuel switching?

21 A. No, it is not. just the EEI.

22 THE CHAIRMAN: No, just the EEI.

23 MR. D. POCH: Q. Oh, just the EEI?

24 MR. WILSON: A. Yes.

25 Q. All right. Thank you.

1 Let's move on then. We have had long
2 discussions about how you use avoided cost of supplies
3 to screen the economic potential for DSM. And then you
4 go ramp out designing programs to get what you can of
5 that economic potential which was screened against this
6 avoided cost.

7 Now, I would like to ask - Mr. Shalaby,
8 perhaps you can tell us - what happens if you go ahead
9 and build a major piece of supply, a nuclear plant, and
10 it ends up rising in price due to unanticipated costs
11 or delays? Hasn't the history been with Darlington
12 that you end up paying for it? You are in for a penny
13 you are in for a pound. After you get past a certain
14 point, there is so much sunk money politically it is
15 difficult to stop and economically it may not make
16 sense to stop?

17 THE CHAIRMAN: I have some trouble with
18 fitting this question into the demand management
19 context.

20 MR. D. POCH: Well, I am going to
21 contrast, Mr. Chairman.

22 MR. SHALABY: What is the question?

23 MR. D. POCH: Q. When you are in for a
24 penny you are in for a pound with supply. Once you
25 start, you don't get anything out of it until you

1 finish so the price may go up, but there is a tendency
2 to keep on going because you can't get that money back
3 that is sunk.

4 MR. SHALABY: A. In the case of other
5 plants, for example, Wesleyville, Atikokan expansion
6 and so on, there were plans that were stopped and
7 abandoned. So, it is not a universal once you are in
8 you have to complete the plans. We have cancelled
9 projects in the past.

10 Q. When you do that you eat the sunk
11 costs, we all eat the sunk costs, there is no recouping
12 them?

13 A. Those costs are charged to customers,
14 yes.

15 Q. But we won't be able to go back in
16 time, will we, with DSM and retroactively redesign
17 programs to capture opportunities if they are lost.
18 Once lost, they may come up again when a house gets
19 rebuilt twenty years later or fifty years, but many of
20 these opportunities, once lost are lost for some time;
21 fair?

22 MR. WILSON: A. Yes, that's right.

23 Q. And indeed, Mr. Shalaby, just to
24 remind us from Panel 3, once you have committed to a
25 nuclear plant, once you are in there with the shovels,

1 avoided cost tends to fall because you can no longer
2 avoid that supply. You have basically assumed you are
3 going to have that supply there for the value for other
4 supply or other conservation for a given year is not
5 there if you didn't have that nuclear in place; right?

6 MR. SHALABY: A. Once a nuclear plant is
7 producing electricity that will be the case. But once
8 committed, there are ways of stretching out schedules
9 or delaying or cancelling. So, your phenomenon is
10 correct once the electricity is on line.

11 Q. So, doesn't this mean that for
12 supply, avoided cost estimates at the planning stage
13 today are likely to be a floor for what it will cost to
14 the extent you have cost overruns and delays, but
15 nevertheless choose to complete, but they become a
16 ceiling for DSM, at least the lost opportunity section
17 of DSM?

18 A. I don't know how you make that
19 conclusion from the questions you just asked us over
20 the last several minutes.

21 Q. Well, if you screened out an
22 opportunity based on avoided cost, then that avoided
23 cost was the ceiling and it may be too late to get it
24 later when we find out that the supply turns out to be
25 too expensive; and indeed it wouldn't matter then

1 because you are committed to the supply.

2 But on the supply side, when you find out
3 it has gone up in price, we can see what is happening
4 with Darlington. So that there is this asymmetry. Do
5 you understand that, Mr. Shalaby?

6 A. Not from the description you have
7 given, no.

8 MR. BURKE: A. I think I would just like
9 to remind you of points we have raised several times;
10 that there is 10 per cent adder on the supply costs.
11 It is included in the avoided cost --

12 Q. But that is for the niceness of this,
13 isn't it, Mr. Burke?

14 A. Can I just finish my -- and also that
15 with that in place or even without it, few would have
16 been screened out. That is, it's not like our plan
17 would have changed on the demand side if the avoided
18 costs had been much higher.

19 Your view as to what technologies you
20 might want to put in might change but our view is and
21 our experience is that very little is screened out
22 because of it.

23 Q. Let's move on. Panel, we have seen
24 in your formulation of elements that you are going to
25 give, I think the words were actually "top priority" to

1 demand management. Let's look at some implications.

2 Can you turn in our Volume 2 materials to
3 page 70. This, as you can see from the cover on the
4 preceding page, is the excerpts from Ontario Hydro's
5 1990 annual research report. On page 70 of our
6 exhibit, page 38 of that document, there is a breakdown
7 of total costs, including those for space, materials,
8 equipment and work done. It's the second heading. We
9 just added up the numbers given there 37.7, 4.2 and
10 39.2 and got \$81.1-million.

11 I take it, first of all, Mr. Shalaby,
12 that doesn't include the work that AECL and COG, the
13 CANDU Owners Group, does which I think we heard in
14 Panel 2 is about \$60 or \$70 million; is that right?

15 MR. SHALABY: A. I have no additional
16 information on that.

17 Q. All right. If you go over to page
18 71, you have provided there a breakdown of where the
19 money is spent and I didn't see a category for DSM but
20 I take it that that would be captured by utilization,
21 the first heading.

22 MR. WILSON: A. Yes, that's correct --
23 well, pardon me, substantially correct.

24 Q. Environment impacts, for example,
25 might be a cross-sectoral one as well?

1 A. Yes.

2 Q. Utilization gets 8 per cent and that
3 would be where the bulk of the sort of technical
4 research on technologies, for example, technology
5 improvements for development would be for DSM?

6 A. I'm sorry I wasn't following your
7 question.

8 Q. The utilization heading would be
9 where you would capture sort of technological
10 development.

11 A. Yes, that's substantially correct.
12 I would just caution that the research division doesn't
13 do all of the research in demand management that
14 Ontario Hydro does.

15 Q. Okay. Some of that would have
16 been -- for example, marketing research is part of your
17 other budget. As we saw this OM&A budget.

18 A. We also contract technical research
19 outside of Ontario Hydro.

20 Q. Okay. Indeed, if we look just to
21 contrast, we see for example nuclear generation is 33
22 per cent, nuclear waste, another 4, so that's 37 per
23 cent. Assuming that the AECL and COG research funds
24 are separate, they would add to that. Indeed, could
25 you just turn to page 72 and we just took the -- we

1 went to your 1990 annual report and the total research
2 and development there is said to be 148 million.

3 A. That was charged to operations and an
4 additional 16 were capitalized.

5 Q. Right. Indeed, the 148 is roughly
6 the sum of the 81.1, that are in the research report
7 and the difference between that and 148.2 is 67 million
8 which is the number I had suggested was the one for
9 AECL. We can clear that up with Panel 9, I'm sure.

10 MR. B. CAMPBELL: Just a minute. Are you
11 putting forward as an assertion that the 67 is
12 equivalent to the COG funding?

13 MR. D. POCH: Yes. And, Mr. Campbell,
14 maybe you can help us here. I know we have both been
15 at the OEB and this has been discussed many, many
16 times. That's in the ballpark, isn't it? We don't
17 need to waste a lot of time on this, do we.

18 MR. B. CAMPBELL: I don't know. All I am
19 saying is that I don't know whether that figure in the
20 annual report page that you have cited here is the sum
21 of the figures that you have mentioned, and I don't
22 believe anybody on this panel can tell you that either.

23 Mr. Wilson can speak to the amount of
24 research that is contracted for by the energy
25 management branch in respect of its activities, both

1 internally and outside to Hydro.

2 MR. D. POCH: Let's get to that then,
3 sir.

4 Q. Mr. Wilson?

5 MR. WILSON: A. Yes.

6 Q. Can you give us an indication of how
7 much R&D is spent in DSM? Annual? At this point in
8 1990.

9 A. The number has been rising pretty
10 quickly. The most recent number I have is 1990, for
11 last year, and that was \$30 million.

12 Q. I'm sorry?

13 A. \$30 million.

14 Q. \$30 million, okay.

15 And so if we assume - whether or not that
16 148 is right - if we assumed --

17 THE CHAIRMAN: Just a moment. Then that
18 30 million includes in-house technical consultation and
19 market research, does it?

20 MR. WILSON: I believe that would include
21 market research as well as technical research, yes.

22 THE CHAIRMAN: And that would be in-house
23 research and outside consultants?

24 MR. WILSON: Yes.

25

...

1 [11:17 a.m.] MR. D. POCH: Q. And just on the
2 technical side, can you give us an idea. Most of it, I
3 take it, would be market?

4 MR. WILSON: A. Just a moment, please.

5 No, I think something like about 25 per
6 cent of that would be market research.

7 Q. And how much would be technical?

8 A. About half.

9 Q. About half.

10 A. Strictly technical work.

11 Q. So, in the range of about \$15
12 million?

13 A. About that, yes.

14 Q. Okay. Accepting, and we will for
15 certain come back to this in Panel 9, but accepting
16 that my suggestion is about right that there is roughly
17 \$100,000 million spent on nuclear R&D, internal and
18 external, that is quite a significant difference in
19 commitment, and I would have thought that at this early
20 stage in capability building, this would be just the
21 time when you would want to be working up technologies
22 and trying to get things to a marketable stage and so
23 on sooner, to support your ramp up.

24 THE CHAIRMAN: What's the question?

25 MR. D. POCH: Q. First of all, is my

1 premise right that it is important to do technical
2 research and marketing research, particularly important
3 early on to support the ramp up?

4 MR. WILSON: A. I have to weigh this.
5 As we get going with marketing, putting programs to
6 gain experience, I believe it's been more important to
7 focus on market research to ensure that we can do
8 something which is truly useful and will meet
9 customers' needs and achieve energy efficiency savings
10 at the same time.

11 Technical research, by its character, if
12 you are looking at technologies which are not market
13 ready, in fact may still be in the lab, can take
14 anywhere up to ten to twenty years to bring to
15 fruition. We don't have that amount of time, and we
16 are not that patient.

17 The agencies that undertake basic
18 research are organizations like the National Research
19 Council. That is not our business. We are not in the
20 business of developing specific products, either, for
21 General Electric or Sylvania or any particular
22 electrical product, nor would we necessarily be the
23 best suited in the economy to undertake specific
24 product research and development.

25 We see our role in research as one of

1 facilitation, of fine tuning, of adaptation from other
2 climates perhaps, or other places, to the Ontario
3 situation, and to accelerate the technology transfer.
4 So, I would hate to characterize our \$15 million on
5 technical R&D as being sort of inappropriate. I think
6 we will be spending more in the future, and I was
7 suggesting that, in my direct evidence, that we will
8 likely do so in support of standards. But we are far
9 from the only player in this business of developing
10 sufficient products.

11 Q. Let's go on and talk about timing.
12 You have indicated in principles, first of all, 3.5.1,
13 that development implementation of economic demand
14 reduction programs should be started earlier enough to
15 be a factor in contributing the most cost-effective
16 demand supply balance. In 3.5.2 you say:

17 Priority should be given to
18 influencing the new market rather than
19 the retrofit.

20 I think you actually talk about new
21 construction?

22 A. Yes, that's right. Well, it's new
23 appliances, it is new everything.

24 Q. Let's take a look at this question of
25 lost opportunities in terms of a building. Can we

1 agree that the categories we might look at would be,
2 first of all, new construction; replacement, equipment
3 replacement that was taking place irrespective of
4 conservation considerations; third might be where a
5 building is being remodelled or renovated, again, quite
6 apart from conservation considerations; fourth would be
7 an expansion situation, again, apart from conservation;
8 and the fifth would be a retrofit, where the decision
9 is prompted solely or primarily due to efficiency
10 considerations. You are going to go and pull out a
11 piece of equipment that is in there that wasn't going
12 to be changed anyway and change it to get the
13 efficiency. Have I got them all, Ms. Fraser?

14 MS. FRASER: A. I agree generally that
15 those are probably the main points which are going to
16 make a difference.

17 Q. Of course, in new construction, we
18 would expect the technically feasible options for
19 efficiency improvement to be the widest, everything is
20 open?

21 A. Yes.

22 Q. Would you agree that this concern
23 about lost opportunities, lost opportunities
24 distinguish themselves from more discretionary
25 opportunities available to you, because of either the

1 feasibility or the cost premium of later installation,
2 or else because of the service life of the -- really a
3 subset of that, the service life of the building or the
4 equipment?

5 A. Yes, I think I covered that in my
6 evidence in chief.

7 Q. Yes. Now quite clearly retrofit is
8 different than that. And that is, in your 3.5.2, where
9 you say:

10 Priorities should be given to
11 influencing the new market rather than
12 the retrofit.

13 But wouldn't you agree that
14 there is a different kind of opportunity presented,
15 different than retrofit situation, when you are talking
16 about equipment that is going to be replaced anyway in
17 a renovation, or in a remodelling, or in an equipment
18 replacement because of equipment end of life, that
19 these two need to be considered lost opportunity
20 situations?

21 A. They could be. I thought of another
22 opportunity where energy efficiency could be improved,
23 and that's in the operation and maintenance of
24 equipment, and the training in a commercial building of
25 the building staff. I think that is also critical.

1 Q. That would be sort of like a
2 retrofit, though, wouldn't it? There is no obvious
3 time when that's more cost-effective than other times?

4 A. No. And it is probably something you
5 have to keep on doing time and time again, because
6 building maintenance staff change and things, but --

7 Q. If we look at the trade schools,
8 though, that might be a lost opportunity, if you get
9 someone trained formally. It is easier to get them
10 while they are at school then try to educate them later
11 with continuing ed.?

12 A. Yes, plus there is a lot of on the
13 job training in terms of writing procedures and making
14 sure these procedure and operations manuals are updated
15 when the new equipment comes in and so on.

16 Q. So, you would agree that if we don't
17 want to lose opportunities, we have to treat all of
18 those occasions, all of those changeovers, with the
19 exception of the retrofit, in general treat them as
20 lost opportunities, get them soon. If we don't get
21 them soon, there is a price to be paid in either lost
22 efficiency or a greater cost of getting that efficiency
23 later?

24 A. Yes.

25 Q. Now that we have agreed on that

1 broader definition of lost opportunity resources, not
2 simply new construction versus retrofit, let's just
3 look at future load and the opportunities or lost
4 opportunities there.

5 Would you agree that future load
6 originates generally in three ways: New customers in
7 new buildings with new equipment; existing customers
8 adding new equipment, either for existing, say more air
9 conditioning or new end uses, getting a computer for
10 the first time; and three, existing customers using
11 existing buildings and equipment, but using it more
12 intensively or for longer periods of time?

13 A. Off the top of my head, those are
14 probably the three categories. Mr. Burke might have a
15 couple more.

16 Q. I just suppose there are permutations
17 and combinations. We could have a customer decide to
18 replace existing equipment, and they happen to choose
19 one piece of equipment with higher capacity for some
20 reason.

21 A. Correct. Well just because it was
22 higher capacity it wouldn't necessarily make
23 additional...

24 Q. Would you agree then that with the
25 exception of using existing buildings or equipment more

1 intensively, all of these sources of load growth
2 involve lost opportunity decisions on the part of
3 customers? There is going to be a point in time when
4 they purchase something, basically.

5 A. Purchase decisions are definitely a
6 key point that you want to influence, and that is why
7 we deal with both decision makers and influencers, to
8 deal with that purchase decision opportunity.

9 Q. Even in that last category, load
10 growth originating from more intensive use of existing
11 equipment or longer use, if we think about the future
12 efficiency of facilities that will be used more
13 intensively sometime in the future, if we look at the
14 efficiency of new buildings being added now that will,
15 in the future, be this old building that all of a
16 sudden gets used more intensively, even in that sense,
17 that last category is indirectly tied to the lost
18 opportunity situation for the new building now. Do you
19 get what I'm saying?

20 A. I think we may be getting a little
21 deep, but by and large I think so, yes.

22 Q. But 3.5.2.

23 MR. BURKE: A. I am sorry, can I
24 understand? Is the lost opportunity that if you are
25 forecasting that that building is going to use more

1 energy in the future, you might do things differently
2 today? Is that what you are saying?

3 Q. Well, I'm just saying that that one
4 form of future load growth that we didn't fit into our
5 lost opportunity category directly will exacerbate the
6 impact of getting or not getting the lost opportunity
7 in new construction now.

8 A. You have lost me on this one, but
9 that's okay.

10 Q. Now, that is why when I looked at
11 3.5.2, it only made this distinction between new
12 construction and other scenarios.

13 Would you agree that because virtually
14 all the new load growth is either directly or
15 indirectly a lost opportunity situation or tied to one,
16 that when it comes to DSM, sooner is better, first of
17 all? That's I guess obvious.

18 MS. FRASER: A. If you can get it, yes.

19 Q. And that erring on the high side can
20 really be advantageous, if we are concerned about not
21 missing these lost opportunities?

22 A. I think there is the other thing that
23 you might want to balance this discussion with, and you
24 yourself have mentioned dimmable ballasts a few times,
25 and that in actual fact with the technology

1 improvements that are coming down the pipe, whether
2 they are technically feasible now or not commercially
3 available or whatever, sometimes those can provide much
4 better savings than what we might input today. So, by
5 making the change today, we may be locking out those
6 savings for awhile longer.

7 I think there is a balancing here that we
8 wouldn't want to go and even if we could,
9 instantaneously replace everthing that there was today
10 to -- and that would, of course, get rid of the issue
11 of the lost opportunities, that in some cases we may be
12 freezing out future improvements that are coming down
13 the road. So, I think there is a balancing act.

14 I think there is also this whole issue,
15 in terms of the -- what I talked about, I think it was
16 yesterday, in terms of harvesting. That the more you
17 are in a building, the more you are working with a
18 building, the more you can find different things to do
19 with a building.

20 I think there is also the issue of
21 standards. We see standards coming into play. We have
22 got appliance standards that we know are coming in in
23 1994. Our scenario C makes assumptions about some
24 pretty significant and dramatic improvements in
25 standards, including a building standard for commercial

1 buildings in Ontario, which we have never had, by '95,
2 and if we do some things now in advance of that, we
3 might be freezing out some things that can be changed.

4 For instance, if it were cost-effective
5 to change all the refrigerators today, the appliances
6 that are going to be available in 1949 are going to be
7 much more improved. So, I think there is a balancing
8 act here that is not -- I don't think it is quite as
9 simple as you wanted me to say it was in terms of
10 sooner rather than later.

11 Q. Changing fridges is not one of those
12 lost opportunity examples though?

13 A. No, but buying a new fridge is.

14 Q. Right.

15 A. Maybe we should be paying people not
16 to buy a new fridge until 1994 when the new standard
17 comes in.

18 Q. But if they are going to buy a new
19 fridge, better to get the lost opportunity, right?
20 Because it will be there for a while, and the new
21 standard won't impact on that, will it?

22 A. No.

23 MR. D. POCH: Thank you.

24 Mr. Chairman, that would be a good point
25 for a break.

1 THE CHAIRMAN: Break for 15 minutes.

2 ---Recess at 11:33 a.m.

3 ---On resuming at 11:55 a.m.

4 THE CHAIRMAN: Please be seated.

5 MR. D. POCH: Q. Ms. Mitchell, I
6 understand you've got some more information for us?

7 MR. B. CAMPBELL: I think it's Ms.
8 Fraser, actually.

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1 [11:55 a.m.] MS. FRASER: A. Yes. Just to keep up
2 with the theme that nothing stays the same for long,
3 the energy-efficient lighting program which applies to
4 the commercial/industrial sectors will be expanded to
5 include the halogen PAR lamps that -- we're replacing
6 employee halogen capsule light inside the par
7 enclosure, and they basically provide the same light
8 output as standard PAR lamp with an average 40 per cent
9 decrease in energy consumed.

10 We'll be including that in our
11 energy-efficient lighting program and providing an
12 incentive of \$3 as against the \$4 premium price. So, I
13 just thought...

14 Q. That's a reflector style --

15 A. It basically replaces pot light type
16 spot lamp that you might see in a restaurant or retail
17 stores and things like that.

18 Q. And that's a version of that tungsten
19 halogen technology?

20 A. Yes, it's not an A-line bulb, per se,
21 but it does replace the...

22 Q. Okay, thank you.

23 THE CHAIRMAN: I think you said an
24 incentive of \$3 as against \$4 premium price.

25 MS. FRASER: Correct.

1 THE CHAIRMAN: What do you mean by the
2 premium price?

3 MS. FRASER: The price over the
4 inefficient alternative that's currently used. This
5 lamp --

6 MR. D. POCH: Q. So, you are offering 75
7 per cent of the incremental cost as the incentive?

8 MS. FRASER: A. That's right. And these
9 lamps also last for 2,500 hours as opposed to 2,000
10 hours. What we expect as a result of offering \$3 as
11 opposed to \$4 is that that price will go down.

12 Q. Okay. Can we turn to another aspect
13 of timing. At pages 6 and 7 of Volume 2 of our
14 materials, Exhibit 270. These are just further plots
15 of the information that appears on page 5 and was, I
16 think, also appeared in graphic form on page 17.

17 This is the information from the original
18 plan, Balance of Power, but we have simply used the
19 latter columns, the ones which plot the change in the
20 DSM against just the growth in load as opposed to
21 against total load, and you can see it there for --
22 page 6 for capacity and page 7 for energy.

23 Again, the shape of those curves is
24 consistent with your understanding of what the plan was
25 at the time of the balance of power, Mr. Burke?

1 MR. BURKE: A. Yes. I also believe that
2 there are similar plots for the updated numbers,
3 similar but not exactly the same in Exhibit 9, Chapter
4 6, the annual contribution of demand management.

5 Q. That was one of the load forecast
6 exhibits?

7 A. Yes.

8 Q. All right. We can see there that the
9 peak effort or the peak result is the -- a lot of the
10 acquisition tends to occur certainly at the fastest
11 rate in the 90s, and when this was cast, of course -
12 this being from the balance of power - that was when
13 nuclear was going to be introduced, I think, at around
14 2003 or 2004, Mr. Shalaby?

15 MR. SHALABY: A. In the medium load
16 growth, yes.

17 Q. We have, of course, been told that it
18 won't be introduced now before 2007, assuming any is
19 approved.

20 Panel, would we expect to see, because of
21 that sort of expanded window, more opportunities
22 because just more turnover and so on, more need because
23 that supply alternative has been delayed, and higher
24 avoided cost which you are screening against, at least
25 depending who's right, we or Mr. Burke, there may be

1 more economic potential.

2 For all those reasons would we expect to
3 see the lines coming up a bit in the early post-2000
4 period now?

5 MR. BURKE: A. First of all, I can't
6 address the issue of whether the avoided costs are
7 going to change because of the nuclear moratorium, but
8 I just want to observe that on page 73 of Exhibit 9
9 there is a plot of the efficiency improvement program
10 impact.

11 It's given in megawatt terms, it's not in
12 per cent terms, but the derivation of that profile has
13 nothing to do with the particular need dates, it was
14 derived on the basis of the estimates of potential and
15 on the estimates of the penetration rates applying to
16 each of the segments, taking into account the
17 replacements and so on.

18 As I indicated in my direct, because we
19 have assumed that a large majority of the existing
20 stock is visited in a sense and upgraded by the year
21 2000, the opportunities do scale down after that, and I
22 guess one could hope that the penetration rates would
23 change more and more, but I have already given you a
24 sense from the numbers that we talked about earlier
25 this morning that the penetration rates tend to rise.

1 They may peak out at levels that you would think less
2 than desirable, but they do rise, we don't diminish
3 them at any point in the future.

4 The reason the attainable results
5 actually fall off is because there is less left to
6 attain.

7 Q. Okay. Just in terms of that then,
8 penetration rates, and in terms of the speed at which
9 you can acquire these demand side resources, one of
10 your guiding principles is you don't like to offer
11 incentives greater than avoided cost. That was the
12 interpretation of the acceptability to customer's
13 principle we spoke of.

14 Wouldn't you agree, even if there was no
15 more technology out there to be had anywhere near the
16 ones -- if avoided costs went up, even if that didn't
17 lead to new technologies, it would change the amount of
18 incentive you can offer without dishonouring your
19 principle of acceptability; right?

20 MR. B. CAMPBELL: I'm sorry, what would?

21 MR. D. POCH: A higher avoided cost.

22 THE CHAIRMAN: I think that question has
23 been answered before, but it would seem to follow. As
24 I recall it, the answer would be yes.

25 MR. D. POCH: Okay.

1 Q. Let's turn to the question of
2 capability building. In principle 2.2.4 you say:

3 Preparations for demand and supply
4 options will be undertaken in time to
5 meet the upper load growth projection
6 while avoiding the cost of premature
7 commitment.

8 And in 3.5.1 you say:

9 Development and implementation of
10 economic demand reduction programs should
11 be started early enough to be effective
12 in contributing to the most cost
13 effective demand supply balance.

14 Could you turn to page 112 of Volume 1 of
15 our materials. This is Exhibit 269 at page 112, and
16 there we asked you about whether you used your own
17 buildings and stations to field test advanced EEI
18 technologies and so on, and the response -- the gist of
19 it is:

20 Since you are promoting proven
21 technologies to electricity customers of
22 Ontario, the aspect of program design
23 that is most uncertain is the actual
24 marketing of the program to allies,
25 channel members and end users.

1 So, would you agree then in finding out
2 how best to achieve the maximum amount of
3 cost-effective EEI in conformity with your principles
4 that tell you to have a capability if it's needed, the
5 issue is not so much how much the measures themselves
6 save but what's the best marketing and delivering
7 mechanisms to get maximum attainment?

8 MS. FRASER: A. That is certainly
9 critical.

10 Q. Isn't it true that you can't know
11 reliably how much EEI you can induce and at what cost
12 until you have built your own capability to field large
13 scale EEI programs whose results can be measured?

14 A. We are learning as we go, that's for
15 sure.

16 Q. All right. And to find out the
17 maximum customer participation, maximum participant
18 savings and so on, these various drivers, doesn't Hydro
19 have to try out the most aggressive program delivery
20 strategies; in other words, Hydro can't know where the
21 ceiling is without bumping into it?

22 A. That's one way to find out, that's
23 right. That is, I think, what the Espanola test is all
24 about.

25 Q. Right. We have covered that point

1 with respect to incentives, until you have pushed them
2 so far and you get no more results you don't know that
3 you have pushed them far enough; right?

4 A. Yes. It works both ways.

5 Q. Right. Would you agree then both for
6 the lost opportunity reasons we spoke of earlier and to
7 honour this strategy which exhorts you to get
8 capability in place and to know what your capability is
9 and so on --

10 A. I don't think that element applies
11 just to our capability, it also deals with the whole
12 infrastructure in the marketplace.

13 Q. Yes, yes. So, these comments would
14 apply equally well to the government in the audience
15 and the audience themselves?

16 A. Sure.

17 Q. For all these reasons then it's this
18 push towards the suggestion that it's appropriate to
19 try the maximum strength approach?

20 A. I think it's appropriate to try a
21 whole realm of things. I think it's very important
22 that we don't confuse the market with a lot of turn-ons
23 and turn-offs and that kind of thing.

24 The marketplace is something that is best
25 changed in a way that doesn't disrupt it. I think I've

1 already seen the impact of full incentives in Northeast
2 Utilities where they, at the end of March, they reached
3 the amount of money that they had available to spend
4 for the whole year and, as a result, had to cancel the
5 program.

6 I understand the same thing holds true
7 with Boston Edison's lighting program, that they've had
8 to stop accepting applications.

9 This sort of activity which turns on and
10 turns off the lighting contractors doing that sort of
11 thing is very disruptive.

12 Similarly, I believe New York State
13 Electric & Gas' motor program jumped to \$30 last year
14 from \$12 per horsepower and they are now moving it back
15 down to \$12 for 1992 for exactly that same reason, they
16 are paying more than what was happening, people were
17 pulling out motors early rather than replacing them at
18 the time of breakdown, which is not cost-effective.

19 So, I think there are caveats on both
20 sides over what I've already said in terms of
21 incentives, but I won't do that.

22 Q. Don't take this as an invitation to
23 repeat yourself.

24 A. Okay.

25 Q. Let me ask you this, panel. If the

1 medium load forecast is presumed to be right, if we
2 take the hypothetical where you are not allowed,
3 perhaps by reason of this Board, to build major supply,
4 what in addition to what you are currently proposing
5 would you do to ensure the reliability of the system,
6 and let's feel free to deviate from your strategy
7 elements, if necessary, to answer that question?

8 MR. B. CAMPBELL: Well, Mr. Chairman, I
9 am not at all sure that that kind of question is
10 amenable to an off-the-top of the head kind of answer
11 and I think it's quite unfair to put the panel in the
12 position of projecting what the corporation would do
13 under those circumstances.

14 That is not a matter that the panel has
15 had any opportunity to consider and it would be an
16 extraordinarily serious question. I don't think they
17 should be asked to speculate on something.

18 MR. D. POCH: Mr. Chairman, it's
19 certainly our position that one alternative to the
20 undertaking is no major new supply and, quite clearly,
21 focus would then be on: What can be offered other than
22 major supply, and if these witnesses have some evidence
23 to offer on that alternative, I think the Board would
24 be well served to have it.

25 MR. B. CAMPBELL: With respect, Mr.

1 Chairman, these witnesses have said that they are going
2 to get everything they can get and if that delays any
3 new supply or replacement of retiring facilities beyond
4 the time frame of the approvals that we're looking at,
5 then they would be quite delighted.

6 They've also given their best judgment as
7 to what they hope to be able to achieve and they have
8 reinforced repeatedly the proposition that they are
9 going to get everything that they believe they can get
10 and they've given, against that background, an estimate
11 of what can reasonably be relied on for planning
12 purposes.

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1 [12:07 p.m.] To ask them now to do this is pure
2 speculation on something that is over and above what is
3 in my submission quite unfair given the context of
4 their testimony.

5 MR. D. POCH: Mr. Chairman, I think Mr.
6 Campbell mischaracterizes his own witnesses' evidence.
7 They have not given us what the maximum they can do is
8 in the scenario I have offered. They have given us
9 what they believe the maximum is given the strategy
10 elements.

11 And my question specifically asks if
12 those strategy elements aren't seen to constrain.

13 MR. B. CAMPBELL: With respect, Mr.
14 Chairman, that they have said that they don't find
15 those strategy elements particularly limiting in
16 putting out their programs. They have been quite clear
17 on that.

18 MR. D. POCH: Then let them give that
19 answer, if they feel there is nothing more they can do
20 even if they didn't have strategy elements to contend
21 with, that would be their answer then.

22 MR. B. CAMPBELL: With respect, Mr.
23 Chairman, that is quite an unfair characterization.
24 What they have been asked to do is something quite
25 different than what is say what the corporation would

1 do under the circumstances that are posited and that is
2 a much bigger question than can be answered by this
3 panel.

4 MR. D. POCH: I'm sorry, if my friend has
5 misunderstood. I am obviously only asking this panel
6 from the perspective of DSM, this is Panel 4, could be
7 done.

8 THE CHAIRMAN: Well, I don't quite
9 understand. Having given the evidence of this panel,
10 as I understand it, that their policy and strategy is
11 to maximize demand management, whatever the scenario,
12 whatever the conditions or future decisions, I am not
13 quite sure what they can add to what they have already
14 said by the context of the question that you have asked
15 them.

16 MR. D. POCH: Well, Mr. Chairman, if I
17 could just give an example. They have, for example,
18 offered us indications of what they think hundred per
19 cent incentives would do or what they think the
20 Espanola approach would do. I guess I am really asking
21 them if we were in more of a crisis, if you will, from
22 the perspective of Hydro fulfilling its mandate, where
23 would they turn? What would get escalated? What would
24 be given priority? What would be their strategy to
25 deal with that?

1 MR. B. CAMPBELL: Mr. Chairman, that is
2 not a matter that is simply a demand matter. The panel
3 has been clear. They have got concepts that are not
4 yet approved concepts they are considering.

5 There are all kinds of ideas that they
6 have said they are prepared to look at in getting
7 whatever they can get and that their efforts towards
8 doing that are not going to be restrained, no matter
9 what position the corporation is in. It hopes to go
10 after what it can go after.

11 If Mr. Poch wants to discuss the efficacy
12 of certain of the approaches that they have looked at
13 and are familiar with, or other programs, I have no
14 objection to all of that. And all of those kinds of
15 things I presume are what he is thinking about in
16 response to this question.

17 But I think it is quite unfair for the
18 question to be put on the basis of what would the
19 corporation do in the event of this or that. This
20 panel can speak to and has filed all kinds of material
21 about program concepts, things they are thinking about,
22 directions that they want to pursue. And if Mr. Poch
23 wants to deal with hypotheticals about what could be
24 achieved by pursuing some of those concepts and program
25 ideas that are in the development stage, I take no

1 objection to that. But I think the question as it has
2 been asked is quite unfair.
3 ---Off the record discussion.

4 THE CHAIRMAN: We are all of the view the
5 question does not have to be answered. The issue
6 raised by it may be a proper subject matter for Panel
7 11 when we come to deal with supply with the various
8 plans. I think it is Panel 11. Am I right with the
9 number?

10 MR. B. CAMPBELL: That's right.

11 THE CHAIRMAN: Whatever one it is when we
12 discuss all the plans in the global fashion.

13 MR. B. CAMPBELL: That's correct, Mr.
14 Chairman.

15 MR. D. POCH: Q. Let's jump ahead then
16 and go right to misinterpreted principles, as we have
17 categorized it, and talk about acceptability to
18 customers, which you have indicated was that item you
19 balanced against, for example, level of incentives.

20 Could you turn in our Volume 2 to page
21 60. Panel, at that page and following are some
22 excerpts from a report on public attitudes that was
23 prepared for the Ontario Energy Board by Goldfarb
24 Consultants back in '86. That would have been around
25 the time when you were in the process of formulating

1 your strategy?

2 MR. WILSON: A. Yes, that's right.

3 Q. And we see at page 61, for example,
4 it says when respondents were offered a choice between
5 higher electricity rates and less acid rain, they
6 favoured the higher rates by a margin of nearly nine to
7 one. Are you familiar with that?

8 A. Yes, I've seen that.

9 Q. And you are also familiar, if you
10 turn over, for some reason there is a feeling out there
11 that there is lots of hydraulic, but if we look at the
12 nuclear, that, for example, at page 64, the sum of very
13 concerned, somewhat concerned, and a little concerned
14 about nuclear power, we got 81 per cent. Does that
15 conform with your understanding of the public's views?

16 A. I don't know whether that is the
17 current view but it was certainly the view in '86.

18 Q. And it notes that these results were
19 obtained before the recent accident in the Ukraine,
20 that was at page 65.

21 And if you look at page 67, it says:

22 Clearly the public has concerns about
23 all new generating facilities. Indeed
24 their concerns are such that they are
25 prepared to see Hydro spend money on

1 financial incentives to persuade people
2 to move their demand off peak hours and
3 on encouraging efficient use of energy,
4 even if these activities cost more than
5 building new generating stations.

6 And that people feel this way two to one.

7 Are you aware of that?

8 A. That's what the survey says, yes.

9 Q. Mightn't it be --

10 A. I might just -- I don't know the
11 details of the background of this, Mr. Poch, but it is
12 not uncommon that we get reactions like that in public
13 attitude surveys directed to the public at large as
14 citizens, not necessarily as ratepayers, and certainly
15 not to commercial/industrial customers who have to pay
16 rates as corporations and may not espouse the same
17 principles.

18 Q. Well, of course this hearing, we are
19 here under the Environmental Assessment Act and we are
20 looking at the betterment of the people of Ontario.

21 A. Yes. But I just want to characterize
22 the reactions of people polled as opposed to our
23 customers and distinguish between those two.

24 Q. Don't you think though that what this
25 indicates is you may have misinterpreted what it means

1 to be acceptable to the public. That acceptable to the
2 public doesn't mean limiting incentives and limiting
3 how much you will spend on DSM. It would appear to
4 mean for a good portion of the public surpassing what
5 you would spend on supply.

6 A. Well, I read this a little bit
7 differently than perhaps you do. The question that was
8 asked is: Should Hydro spend money on encouraging
9 conservation and efficient use, even if it costs more
10 than building a generation station.

11 Now I am going to speculate and my
12 speculation is that people would say does that mean
13 that my electricity prices will be higher if Hydro were
14 to pursue this conservation and they will accept that.

15 I don't think they examine costs in the
16 same academic, rigorous fashion that we look at costs
17 from a total customer cost estimate. The outcome of
18 our using that test clearly is, as we have stated again
19 and again, is that there is a strong expectation of
20 higher rates and people said that they think that would
21 be a good idea and that's the route we are pursuing.
22 I think that our behaviour is quite consistent with
23 this preference.

24 Q. I would like to distribute one more
25 exhibit where we have got on one side we have

1 reproduced the coupon that you used for the light bulb
2 promotion.

3 THE CHAIRMAN: You want this to be marked
4 with a number, Mr. Poch?

5 MR. D. POCH: Yes, Mr. Chairman that
6 would be helpful.

7 MR. NUNN: No. 277.

8 THE CHAIRMAN: 277.

9 ---EXHIBIT NO. 277: Document on which one side is
10 reproduced the coupon that Ontario Hydro
11 used for their light bulb promotion; on
the other side is an ad for promotion of
nuclear plants posed by CEG.

12 MR. D. POCH: On the other side we have
13 posed an ad, a promotion for nuclear plants and --

14 THE CHAIRMAN: You are the author. I
15 take it this is not a Hydro --

16 MR. D. POCH: The one side is Hydro's and
17 the other side is ours, as maybe will become obvious as
18 you read it, Mr. Chairman.

19 Q. And I would like to ask you. Do you
20 think supply was treated the same way as conservation
21 programs that Ontarions would participate? Give us the
22 money up front, we will give you a coupon, we will give
23 you a rebate.

24 MR. B. CAMPBELL: Mr. Chairman, I mean,
25 are we really reduced to trivializing this to this

1 extent? I mean I just can't believe that this question
2 is either useful or probative of anything, and in my
3 submission--

4 MR. D. POCH: I will withdraw the
5 question.

6 MR. B. CAMPBELL: --the question doesn't
7 do justice--

8 MR. D. POCH: I will withdraw the
9 question, Mr. Chairman.

10 MR. B. CAMPBELL: --to the kind of
11 discussion that has been taking place over the last few
12 days.

13 MR. D. POCH: Thank you, Mr. Chairman.
14 Those are all my questions.

15 THE CHAIRMAN: All right.

16 Mr. Thompson, are you ready to start now
17 or do you want to take a luncheon break?

18 MR. THOMPSON: I am ready to start now,
19 Mr. Chairman. With such short notice I might be more
20 brief.

21 THE CHAIRMAN: Thank you, Mr. Poch.

22 MR. D. POCH: Thank you, Mr. Chairman.
23 Thank you, panel.

24 MR. THOMPSON: I hope to be very brief
25 because as usual I have my entire staff of experts,

1 advisors and consultants here with me today. For the
2 record that's nobody.

3 MR. B. CAMPBELL: Sorry, Mr. Chairman
4 just before Mr. Thomas begins. Given that Mr. Poch
5 withdrew the question, I take it the exhibit should be
6 withdrawn as well.

7 MR. D. POCH: No, I don't take that view.

8 I think it's clearly identified in the
9 record that part of it is Hydro's and part of it is
10 simply our shot at a parallel.

11 THE CHAIRMAN: Well, the question which
12 would be the foundation of the exhibit was asked during
13 the course of the examination and answered is my
14 recollection so that -- I mean the principles --

15 MR. B. CAMPBELL: I believe it was
16 withdrawn.

17 THE CHAIRMAN: No, no. But the general
18 nature of the sponsors, that kind of a presentation was
19 explored and answered is my recollection.

20 MR. B. CAMPBELL: You have my submission.

21 THE CHAIRMAN: Mr. Thompson, go ahead.

22 CROSS-EXAMINATION BY MR. THOMPSON:

23 Q. Panel, we have heard a lot about how
24 dynamic all the situations and variables are and all
25 the relationships between supplies and demands and so

1 on. Yet, there appears to be an assumption by Hydro
2 that the availability of natural gas in percentage
3 terms won't increase in the future and will be for all
4 intents and purposes what appear to be a frozen
5 efficiency.

6 The question is: Is it reasonable or
7 realistic that the percentage availability of natural
8 gas will remain constant?

9 Just to back it up, I think it was given
10 as evidence that 50 per cent of all electric houses
11 have availability to change to natural gas and that 75
12 per cent of all houses in Ontario have access to it.
13 What prompts my question is, quite frankly, I live in a
14 village that doesn't yet have natural gas but could
15 have at some time in the future. And that thus the
16 percentage availability of natural gas would increase
17 and that's why I am asking you to keep at a constant
18 level is realistic.

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1 [12:25 p.m.] MR. BURKE: A. Well, it is per cent
2 availability that is -- we are saying that as a
3 proportion of the number of households in Ontario that
4 proportion would stay roughly the same.

5 Clearly there are growth -- there is
6 growth in the number of households anticipated, and so
7 we are suggesting the gas system grows with it. But in
8 terms of accessing areas that are remote to the gas
9 system, I guess we have made the assumption that those
10 areas that are currently remote will be remote in
11 future. That essentially the gas system will expand
12 with the housing stock at the same proportion as it has
13 up to now.

14 Q. Is this your personal assessment, or
15 is this based on what you understand the gas company's
16 plans for expanding their territory to be?

17 A. Well, we have discussed this, I
18 believe, with people in the gas business, but I'm not
19 sure that they particularly make the source of
20 forecasts like this ten, twenty, twenty-five years into
21 the future. So that there is, I suppose, some risk on
22 the up side that the share of houses served in Ontario
23 by gas could increase in Ontario, but effectively we
24 felt that the gas company had saturated the marketplace
25 today.

1 There are a few communities that we are
2 aware of that would like to be connected to the gas
3 system, for which the marginal cost of addition is
4 under debate. And otherwise it is my understanding,
5 anyway, that the gas system is likely to expand in
6 keeping with the way the housing in the province
7 expands.

8 Q. So that it will stay at a certain
9 percentage level.

10 A. Well, that's been our --

11 Q. The absolute numbers will increase,
12 but the percentage levels will stay the same.

13 A. Yes, that's our assumption in the
14 forecast. I would agree that there is certainly very
15 little risk that that would go down. And if there is
16 any risk, it would likely be on the up side. But I
17 don't think it is going to be a lot on the up side for
18 long.

19 Q. I seem to recall that you have
20 already considered that all commercial establishments
21 already use natural gas, if I --

22 A. In our fuel switching assumption,
23 switching scenario, we made the simplifying assumption
24 that all commercial establishments were in areas where
25 gas was available, because they tend to be in the

1 larger urban areas. But I understand that there could
2 be a few per cent that are outside that. We basically
3 may have simplified, but I think when we are talking a
4 few per cent, we are talking probably less than 5 per
5 cent.

6 Q. Second point; we have heard a lot
7 about the desire -- pardon me, the undesirability of
8 electric home heating, and we have heard a lot about
9 Hydro's singular efforts and combined efforts with its
10 allies to promote fuel switching. Yet, if my reference
11 is right on page 8533, Hydro still forecasts that there
12 is a potential for 140,000 all electric houses to be
13 built from 1991 to the year 2000. And I believe it was
14 indicated that 50 percent or 70,000 of those could be
15 converted to gas, therefore leaving 70,000, that would
16 be all electric.

17 I note your comment, and I quote:

18 We'll just say don't heat

19 electrically.

20 And I assume that that will assist the 50 percent
21 switch to gas.

22 Now, I guess again my question is
23 prompted because I'm in the area of Ontario which is or
24 could be affected by this. Why should the balance of
25 the 70,000 be electric and not oil, propane or even

1 wood, especially in the light of Hydro's promotional
2 efforts?

3 A. Well, in the scenarios we
4 constructed, we assumed that the fuel switching
5 programs, that is incentives to move off electricity or
6 mandation to move off electricity in the new housing
7 market, would only apply to natural gas, and we gave
8 estimates of the numbers that would be entailed if it
9 applied to oil and other fuels.

10 Our direction in this area is really our
11 interpretation of what the Ministry of Energy had in
12 mind, and we have sought further clarification from
13 them in that letter that I believe Mr. Wilson put in as
14 an exhibit.

15 THE CHAIRMAN: I think it is 275.

16 MR. BURKE: 275, as to whether we should
17 be considering oil and other fuels as well, in which
18 case the numbers, I believe, were calculated as to the
19 impact that would have.

20 MR. THOMPSON: Q. Would you agree with
21 me that given your promotional efforts to date and
22 your, I guess you'd call it your considerable success
23 in penetrating various markets, it would be a very,
24 relatively simple thing to try to dissuade people by
25 incentives or promotional efforts just to not build

1 electrically heated houses, period? To expand your
2 comment, just to say, "We'll just say don't heat
3 electrically, period." Do you not think that would be
4 a fairly simple process to narrow that 70,000 down?

5 I follow your logic and your
6 understanding, your percentage terms on how difficult
7 it is to convert existing buildings, but it would
8 appear to me that this 70,000 potential all electric
9 houses just stands out like a sore thumb or a nail
10 waiting to be pounded down, if I can use a bad analogy.

11 MR. WILSON: A. I think we have just
12 described, as we have gone along with it, we haven't
13 had time to have a careful look at the economic
14 argument for propane and oil. A tentative look
15 suggests that they would be economic. As we get going
16 and do our homework, we'll have -- we will reach
17 conclusions that make us much more positive than we can
18 be today on this topic.

19 One of the scenarios that we have
20 proposed, and in fact the one we were treating as a
21 reference, is that in about three years time we will
22 get to the point that both we and the provincial
23 government will be convinced that electrically heated
24 houses shouldn't be built, or shouldn't be built with
25 electric heat.

1 For the short term, to sort of announce
2 that today would cause considerable turmoil. Anybody
3 who is halfway through building a house would be in
4 shock, and their alternatives may not be too good.

5 Q. I have a point on that subject later
6 on. But my final question on this area for now is is
7 70,000 houses significant at all in the whole scheme of
8 things, or am I just trying to rearrange deck chairs on
9 the Titanic? Does 70,000 really matter, given the
10 variability we have in forecasting anyways, or is it
11 just something that doesn't really matter?

12 A. Well, it represents over 10 per cent
13 of all the electrically heated houses in the province
14 today. So it is not a drop in the bucket. It is
15 significant.

16 MR. BURKE: A. It is about 7
17 kilowatthours -- kilowatts per house connected load.
18 So that would work out to about just under 500
19 megawatts.

20 Q. So it is a valid concern then. I'm
21 not just wasting my time bringing it out, right?

22 MR. WILSON: A. No.

23 MR. BURKE: A. And as we have indicated,
24 it is on the table as far as we are concerned. We just
25 haven't received enough guidance yet to know whether

1 the government is interested in us doing this sort of a
2 fuel switching activity or not. Our initial
3 understanding was they were interested in houses going
4 from electricity to natural gas, and we have yet to
5 have a clear statement that they also wish us to pursue
6 the other fuels.

7 Q. Now I'd just briefly like to look at
8 the measuring of programs that have relatively recently
9 come into effect.

10 As I indicated, I live in the rural
11 village of Blyth, which doesn't have gas service and
12 everybody has electrically heated water heaters.
13 Ontario Hydro gave me a nice Christmas present last
14 year, when on the 24th of December a contractor came
15 and gave me a shower head, new shower head, and did the
16 tune up on the water tank and so on, and indicated at
17 that time that our house was the last one in the
18 village to be given this treatment.

19 Now we have had almost eight months of
20 actual results. Does Hydro have any data as of yet to
21 measure the savings in our village and other villages
22 similar to this? Do you have any indications as to the
23 success in actual reduction?

24 MS. MITCHELL: A. Are you speaking just
25 on the water heater tune up program?

1 Q. Yes.

2 A. Okay. Well, we track results through
3 the incentive process and through a variety of
4 administrative types of processes. And we do keep
5 track of each utility and each Hydro retail area who is
6 participating in that particular program, the number of
7 tune ups that are performed, and they are multiplied
8 out by a standard watt factor to give us a result.

9 Q. Do you have any preliminary
10 indications yet as to what the results have been?

11 A. Yes. As a matter of fact, since the
12 program was launched in May of 1990, we have completed
13 a province wide, over 65,000 water heater tune ups with
14 over four and a half megawatts in load reduction.

15 Q. Is that better than what you'd
16 anticipated, about the same or poorer?

17 A. It's much better.

18 Q. By what percentage in megawatt terms?

19 A. Probably 50 per cent. The uptake of
20 the program has been very successful.

21 Q. So my understanding, that you have
22 actually saved 50 per cent more megawatts than what you
23 had planned?

24 A. In that particular program, yes.

25 Q. Are any of the other programs of

1 similar percentage success ratios that you have done?
2 I'm thinking maybe not just of this -- I'm just asking
3 about this program, because it is the one I'm familiar
4 with, because it happened in my house.

5 A. Not to my knowledge, not within the
6 residential sector, no.

7 Q. Now I have been present here and
8 heard a lot about the high percentage of installation
9 of efficient street light installation, and I'm just --
10 this question is to do with some of the monitoring of
11 the programs and so on.

12 Since my village participated in the
13 water heater program, and because I have been hearing
14 all about these efficient street lights, I was starting
15 to feel rather proud of what we have been able to do,
16 both at the municipal level, and proud of what Ontario
17 Hydro has done.

18 But last night, as I was leaving my house
19 to come here, I was somewhat mortified to notice that
20 the street light closest to my house was the energy
21 inefficient incandescent type, and that much of the
22 rest of the village has either the sodium or the
23 mercury light, and I had to have the only energy
24 inefficient light bulb, I'm sure, in the entire
25 village. I don't know whether somebody from Hydro had

1 done that just to do me in, or whether the PUC
2 department had made a mistake. But is this an example
3 of slippage, or is this what could be expected, or is
4 this just an isolated instance? What I'm getting to is
5 how does Hydro monitor these programs, in that is this
6 88 or 90 per cent an indication of the municipalities
7 that have signed up for it, or the actual street lights
8 that get installed?

9 MS. FRASER: A. The numbers that I
10 talked about had to do with the pilot program, which
11 was run in eastern Ontario, in northern Ontario, and
12 that had to do -- there were 76 per cent of the
13 municipalities that were eligible participated
14 converting, now with the addition of North Bay, 93 per
15 cent of their lights.

16 Now we have taken that program province
17 wide, and we have a significant number of
18 municipalities that have committed such that when we
19 add the results of the pilot together and the province
20 wide program, we'll have converted over 38 per cent --
21 or will have committed over 38 per cent of the lights,
22 and the program only started late last fall.

23 So if your municipality hasn't converted
24 yet, I will make sure a Hydro rep is out there to talk
25 to whoever.

1 Q. I just don't want my taxes to go up
2 because the PUC is working overtime.

3 A. Yes, absolutely.

4 Q. That's fine then.

5 The next point is to go back to this
6 electric heating scenario that I'm having some
7 difficulty reconciling how programs actually come into
8 be, especially since people have already been out to
9 give me a new shower head and do all sorts of work to
10 my hot water heater, yet there doesn't appear to be any
11 program in place to dissuade me should, God forbid, my
12 house burned down tonight, and I need to build another
13 house, that I don't seem to hear -- have heard anything
14 that would dissuade me from building an all electric
15 house, either in the village, or if I were to build a
16 house out on one of my farms.

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1 (12:38 p.m.) If you could just comment on whether
2 there's going to be an attempt to sort of fill in the
3 cracks in this sort of program or just what the
4 intentions of Hydro are.

5 MS. MITCHELL: A. Well, in answer to
6 your question, as of today we don't have any specific
7 restrictions that would not allow you to build an
8 electrically heated home.

9 However, if you are in an area where
10 natural gas is not available, Hydro does have a program
11 for new construction, the R2000 program.

12 So that if your options or your selected
13 option is electric heating, or you don't have a most
14 cost-effective option available to you, then if you
15 want you can employ an R2000 builder who can build your
16 house, have it certified to R2000 standards which
17 reduces the overall electrical load.

18 MS. FRASER: A. I would point out that
19 the legislation allowing us to provide incentives for
20 fuel switching has not yet been passed. It's been
21 tabled in the House on June 5th and it's expected to
22 pass some time in the fall.

23 Q. So, in other words then, I can sort
24 of gain from this we're just very much at the start of
25 all of these programs, Hydro is sort of in the starting

1 gate, as it were, on these things, that one program may
2 have started while another one is just getting going,
3 and this is all very much in the infancy?

4 A. In terms of incentives for fuel
5 switching it's very much in the realm of discussions
6 with the provincial government; in terms of providing
7 incentives for energy efficiency, our first incentive
8 programs were January, 1989. So that is, I think,
9 pretty recent.

10 Q. Okay. Now to change subjects again.
11 There's been some considerable discussion about the
12 Espanola program and I believe indicated even as
13 recently as this morning there is expected to be an 80
14 per cent participation rate; did I hear that right?

15 MS. MITCHELL: A. Yes, that 80 per cent
16 figure pertains to the participation in the audit.

17 Q. Okay. Am I correct in understanding
18 that the results of this program are going to be very
19 important in judging what is possible in
20 non-metropolitan areas?

21 A. That's correct. For a community of
22 that size it is also intended to discover how
23 successful the community-based approach is to
24 delivering megawatt results.

25 Q. Would I be correct in understanding

1 that one of the critical variables, if not the most
2 critical variable, is the 80 per cent figure and that
3 an acceptance ratio of 15 per cent either way, to go to
4 65 or 95 per cent, could have a major impact on Hydro's
5 conclusions?

6 A. I think 80 per cent is fairly
7 reasonable to expect, based on our prior experience
8 with audits, and we are relatively confident. We are
9 getting at least that uptake now, from what I
10 understand.

11 Q. Would I be correct in assuming that,
12 in general, the per cent penetration in a program like
13 like this, or marketing concepts in general, can depend
14 on the cultural and/or ethnic diversities and
15 historical experiences with incentive programs and
16 rebates in that area?

17 A. I'm not aware of any studies that
18 would confirm what you are proposing, however, to make
19 sure that those things were taken into account, prior
20 to going into Espanola we had several discussions with
21 community leaders to determine what the situation was.

22 Q. I guess we will get to the question
23 that I wanted: Is it possible that if you did a
24 similar test in a rural community in southwestern
25 Ontario where subsidies, rebates and incentives are an

1 accepted way of life, that's a farming community in
2 particular, that 80 per cent participation rate might
3 be abnormally low?

4 A. It's awfully difficult to speculate.
5 I don't honestly know.

6 Q. Conversely, is it also possible that
7 in other areas in the province, as cultural and
8 historical experience differences could suggest, that
9 an 80 per cent participation rate might be abnormally
10 high.

11 A. Again, you're asking me to speculate
12 and the best available information that we have
13 indicates that this is not an unreasonable level of
14 participation.

15 Q. The final question is: Are there to
16 be replications of the Espanola test to validate the 80
17 per cent anticipated participation rate?

18 A. Well, as I've said earlier, the
19 test -- it is a test to begin with, so we are not out
20 to validate the test, however, I think we will take the
21 knowledge and experience gained from this test and
22 determine whether or not we would replicate this across
23 the province based on the results.

24 Q. Okay. Now, to switch to the
25 agricultural potential. I understand the agricultural

1 EEI potential is 136 megawatts by the year 2000 and
2 that's about the same as either the showerhead
3 efficiency program or refrigerator savings, which means
4 all and all it isn't a big deal; am I correct in that?

5 MR. B. CAMPBELL: It's the same, or it
6 isn't a big deal, two questions?

7 MR. THOMPSON: Q. Well, when we're
8 talking about 5,200 megawatts, 136 in percentage terms
9 is not a big significant savings, just to put this all
10 into the proper context.

11 I think the showerhead thing was about
12 118 and the refrigerator was about 132 or something.
13 Just so we can make some comparisons.

14 MR. WILSON: A. While my colleagues are
15 checking numbers, I just observe that no matter what
16 the numbers are, if there's opportunities for farm
17 customers to save some energy they are going to go for
18 it.

19 Q. Well, naturally. We're always
20 receptive to things that are going to put money in our
21 mail box.

22 MS. MITCHELL: A. In answer to your
23 question, it is about the same, but I would like to
24 emphasize Mr. Wilson's comments.

25 Q. On page 8656 of the transcript there

1 was mention made of the results of a customized
2 analysis for 60 large farms. Can you briefly tell me
3 what the results or conclusions might have been on that
4 study?

5 A. The description that I gave in my
6 direct evidence was referencing farm audits which are
7 available to large farm users of 10,000 kilowatthours a
8 month.

9 There are approximately 1,700 of these
10 across the province and we plan on doing all 1,700 over
11 a four-year period, and to date we have done about 60
12 of them this year. We've just basically launched into
13 this program.

14 Q. On page 8662 it was indicated that
15 there were some 84,000 lights installed. What per cent
16 of the total market did that 84,000 represent and what
17 progress or plans are there to increase that
18 marketshare in the future?

19 The same thing with the hog heating
20 lamps; there was also made mention of on that same page
21 that if you have any idea as to -- you indicated that
22 the program was started. Approximately what percentage
23 has been done to date?

24 A. Actually many of the agricultural
25 programs have just been launched or are in the process

1 of being launched and I'm just looking to locate the
2 numbers.

3 Q. If you don't have them available
4 right there it doesn't...

5 A. No. I believe there are 13,000 hog
6 farmers across the province and the program provides a
7 \$5 rebate on a per lamp basis for a minimum purchase of
8 15 bulbs up to a maximum of 60 and, to date, I think we
9 have rebated approximately 26,000 heat lamps.

10 Q. I understand there is a heat
11 exchanger program starting September the 1st, 1991 for
12 dairy farmers and that Hydro will give a \$600 grant and
13 that it's indicated, if my understanding is correct,
14 that already 10 to 20 per cent of dairy farmers have
15 it.

16 What per cent approximately do you expect
17 to achieve in this program? Again, if you don't have
18 the answer there, I can get it later.

19 A. Actually I don't have that specific
20 information available at this point in time, but I can
21 get back to you.

22 MR. B. CAMPBELL: Should we get an
23 undertaking number?

24 THE CHAIRMAN: Would you like an
25 undertaking for that?

1 MR. THOMPSON: That would be fine.

2 THE CHAIRMAN: Number?

3 MR. NUNN: 267.8.

4 THE CHAIRMAN: 267.8.

5 MR. B. CAMPBELL: And just for the sake
6 of my poor notetaking, could I get a description, Mr.
7 Thompson, of the number?

8 MR. THOMPSON: It's the potential for
9 market penetration for heat exchangers for the dairy
10 industry in Ontario.

11 ---UNDERTAKING NO. 267.8: Hydro undertakes to provide
12 potential for market penetration for heat
13 exchangers for the dairy industry in
14 Ontario.

14 MR. THOMPSON: Q. One area that the
15 agricultural industry is very interested in and very
16 concerned about is, any time there appears to be a
17 subsidy or incentive for agriculture we live in morbid
18 fear of the Americans saying it's unfair subsidies and
19 so on.

20 Is there a potential or possibility that
21 any of these subsidy programs for agriculture or other
22 areas of Ontario industry in general could be viewed by
23 the U.S. as unfair subsidies under the Free Trade
24 Agreement?

25 MR. WILSON: A. I would say no. We have

1 heard from Mr. Poch that American utilities throughout
2 the northeast U.S. - he would characterize them as
3 being more aggressive than we are. It would be very
4 difficult to see a Free Trade argument being made on
5 the basis of this.

6 Q. Yes. Unfortunately we tend to view
7 it that when the Americans do it it's one thing, when
8 we do it it's something else, but we will leave that.

9 Now, the last point that I want to get
10 into is just some sort of an idea of how the whole
11 concept of slippage in programs can affect the EEI
12 potential and induced and so on.

13 Now, I'll use an example, this heat
14 exchanger program as an example, a particular example,
15 and let it expand in general to encompass all of the
16 various programs that have been designed or potentially
17 implemented.

18 Would I be correct in understanding that
19 any time there is an incentive program with a fixed
20 starting date and a fixed ending date that there is a
21 potential for slippage and that some people will try
22 to, or there is a tendency or a possibility that there
23 will be some slippage, I guess the word is, on these
24 programs? Is that a generally accepted part of human
25 nature in incentive programs?

1 THE CHAIRMAN: Does the panel understand
2 what you mean by slippage?

3 MS. MITCHELL: No.

4 THE CHAIRMAN: Perhaps you could explain
5 what you mean by slippage.

6 MR. THOMPSON: Q. I will use a specific
7 example. The heat exchanger program is due to start on
8 September 1st. Would you agree with me that somebody
9 who, for example, bought a heat exchanger in June might
10 be tempted to go to his dealer and say: Look, I bought
11 one, I want that invoice dated September 15th rather
12 than June 15th to get the incentive.

13 Now, I should point out that I'm not a
14 dairy farmer - and Mr. Campbell knows very well that
15 even if I were I would never ever remotely consider
16 doing this - but would you agree with me that --

17 MR. B. CAMPBELL: It's consistent with
18 Mr. Thompson's tax...

19 MR. THOMPSON: Q. Would you agree with
20 me that the temptation is there for people to use this
21 sort of slippage or potential to try to enhance their
22 cashflow at Ontario Hydro's expense?

23 MS. FRASER: A. I think what you are
24 talking about is the concept of free riders which I
25 dealt with in terms of my direct evidence, that that is

1 a concern that we have and we try to minimize the
2 number of free riders by good program design.

3 Now, with respect to -- I'm not familiar
4 with the details of the heat exchanger program and
5 whether it's been announced publicly that it's starting
6 September or whether it's just something that is in our
7 materials here.

8 Q. I've been reading about it in the
9 farm papers for the last two weeks.

10 A. Oh, okay, so it is announced, yes.

11 Q. It is scheduled to start on Sunday
12 morning at 12:01 I believe.

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1 [12:52 p.m.] A. Well, probably we put a great deal
2 more faith in our agricultural customers than I do in
3 my commercial customers because what I do with my
4 commercial customers is that when something is
5 effective, we announce it effective immediately so that
6 that kind of situation doesn't arrive; for instance,
7 with the lighting program.

8 So I hope none of you go out and tell the
9 commercial customers that that other one is coming
10 because.... No, there is a potential that they are
11 going to delay purchase of things, never mind purchase
12 something and then try and get an invoice changed; that
13 definitely wouldn't be done, but they may delay their
14 purchases, which again is an issue.

15 So that is one of the things we have to
16 be concerned about in terms of managing our programs
17 and our implementation. So....

18 Q. So that you are trying as best you
19 can to try to make sure that not only you have invoices
20 but there is an actual physical installation there to
21 try --

22 A. Yes. In our lighting program for
23 commercial buildings, our field staff make a visit
24 prior to approval of the project to go ahead to see if
25 those lights aren't already in or even that those

1 types of lights aren't already in, and then the payment
2 is made when we get the invoice. So it's picked up on
3 both sides and we know that the contractor has done the
4 work and all that sort of thing. So that's something
5 we do take into consideration very much so.

6 MR. THOMPSON: All right. That's fine.
7 Those are my questions, Mr. Chairman. Thank you very
8 much.

9 THE CHAIRMAN: Thank you, Mr. Thompson.
10 This completes the sitting for today.

11 Because of the trip to Moosonee and other
12 places, we won't be sitting again until Monday, the 9th
13 of September, at ten o'clock.

14 ---Whereupon the hearing was adjourned at 12:59 p.m.,
15 to be reconvened on Monday, September 9, 1991, at
10:00 a.m.

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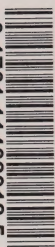
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